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The Lumleian Lectures
ON
TABES DORSALIS.

Delivered before the Royal College of Physicians of London on March 22nd, 27th, and 29th,

BY DAVID FERRIER, M.D. EDIN., F.R.S.,
FELLOW OF THE COLLEGE; PROFESSOR OF NEURO-PATHOLOGY IN KING'S COLLEGE, LONDON; PHYSICIAN TO KING'S COLLEGE HOSPITAL; AND PHYSICIAN TO THE NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, QUEEN-SQUARE, BLOOMSBURY.

LECTURE I.[1]

Delivered on March 22nd.

MR. PRESIDENT AND GENTLEMEN,—The choice of a subject must always, I imagine, be a matter of difficulty to the one who has the honour of being appointed to deliver the Lumleian lectures. Having been invited to open a discussion on Tabes at the forthcoming International Congress of Medicine it appeared to me that I might with advantage to myself, and I hope not without profit to you, take as the basis of my lectures some questions relating to the nature and pathology of tabes which are likely to be debated by the neurologists assembled in Lisbon. Tabes seems to be of perennial interest at neurological and medical congresses. Nor is this much to be wondered at, considering the vast field which it covers and the variety of questions which it raises. The literature of tabes is enormous and the treatises and memoirs relating to it literally count by thousands. It will be my endeavour in these lectures to present to you as succinctly as I can the evolution of our knowledge of tabes, its nature and causes, and to indicate the problems as yet unsolved and on which we need further light.

Tabes dorsalis, in the modern acceptation of the term,[2] is a very different thing from the tabes dorsalis or dorsualis—*ῥῆξις νωτιδος*—of the Hippocratic writers. This was essentially a condition of neurasthenia associated with spermatorrhœa and attributed to sexual vice or excess. It was supposed to be due to wasting of the spinal cord, but on what evidence this was based there is nothing to show. That true tabes ever existed in Europe before the introduction of syphilis in the fifteenth century is more than doubtful. The retention of the names tabes dorsalis (or dorsualis) by the older German writers for the disease as we now understand it, though strictly correct according to modern pathology, tended largely to create confusion and excite prejudice against its unfortunate victims. Though cases of what we now know must have been tabes had been described by various observers, such as Ollivier (1824), Hutin (1827), and Cruveilhier (1835-42) (who figures the post-mortem appearances in his atlas), in France; and by Horn (1827), Jacoby (1842), Steinthal (1844), &c., in Germany; and though in this country Todd (1847) had drawn a clear distinction between paralysis and incoördination[3] and was the first to connect incoördination with disease of the posterior columns of the spinal cord, yet there is no doubt that the first systematic account of the etiology, symptomatology, diagnosis, prognosis, and treatment of tabes was given by Romberg (1840-1857). In his "Lehrbuch der Nervenkrankheiten" he describes the characteristic gait; the pathognomonic symptom now called by his name; the increase of the ataxic disorders on shutting the eyes; the shooting pains, anæsthesiæ and parasthesiæ, the bladder troubles, the affections of vision, and the striking myosis and fixity of the pupils. He mentions the relative infrequency of tabes in women, and as to prognosis he utters the gloomy verdict: "To none affected by this malady is there any hope of recovery; *über alle ist der Stab gebrochen!*" Of the morbid anatomy he says that, notwithstanding considerable differences, the post-mortem examination shows for the most part partial atrophy of the spinal cord, mainly in the lower part of the lumbar enlargement and onwards, and in the nerves issuing from it. The diminution of volume amounts to the half or two-thirds of a normal cord, affects the grey and white substance, or only one of these. The atrophy of the nerves in the leash of the cauda equina is often so pronounced that only the empty neurilemma sheaths remain. Also the roots of higher inserted nerves participate in the atrophy and, what is of particular interest, the posterior roots are sometimes alone affected, at other times along with the posterior columns of the cord, while the anterior roots appear normal. Romberg, however, did not clearly differentiate the basis of ataxy from that of muscular paresis or paralysis and he describes as equally belonging to tabes leathery induration of the white substance and more frequently softening of the grey matter.

There was no notable addition to the literature of tabes until Duchenne in 1858 published his researches on *ataxie locomotrice*. These were the starting point of the extraordinary amount of attention that the subject has attracted since his time. Duchenne, purposely endeavouring to divest himself of all preconceived notions and pursuing his investigations in the limbo of so-called general spinal paralysis and unclassified forms of chronic myelitis, discovered what to him was a new disease which, from its most striking symptom, he termed *ataxie locomotrice*, adding the further term *progressive* on account of its habitual tendency to advance rather than recede. He clearly differentiated the affection from muscular paralysis or paresis and described with a masterly hand its most characteristic manifestations. Trousseau in his brilliant clinical lectures largely spread abroad the knowledge of this affection but he did scant justice to previous writers in calling it Duchenne's disease. For though practically a discovery on Duchenne's part it was no discovery in the true sense of the term, as the malady was undoubtedly the same as had been known under the name of tabes dorsalis. And though Duchenne differentiated the affection more precisely than had been done before him yet he contributed nothing to the pathological anatomy of the disease and was inclined to attribute it to some affection of the cerebellum rather than of the spinal cord. Trousseau went so far as to look upon the malady as a pure neurosis and considered such changes as had been observed by others in the spinal cord and posterior roots as probably only the secondary result of the functional disturbances created by some obscure general condition. This view was maintained by others of his school, notably by Isnard who regarded tabes as a neurosis of the muscular sense.

The connexion between the symptoms of tabes or locomotor ataxy and degeneration of the posterior columns, first termed grey degeneration by Cruveilhier, had, however, been satisfactorily established by many observers, among others by Todd and Gull in this country. The minute anatomy of the morbid changes began with the microscopical investigations of Virchow (1855) and Rokitansky (1857). Rokitansky described it as a proliferation of the structureless ependyma-like connective tissue and stroma of the nerve centres, which caused destruction of the nerve elements proper, and resulted in induration or sclerosis of the affected parts (schwielige degeneration). The process was not inflammatory, however, as there was no exudation; and Rokitansky included in the same term the end-results of various other forms of lesion of the nerve centres. But the first important microscopical investigations, specially in reference to the now well-defined symptom-complex of locomotor ataxy, were made by Bourdon and Luys (1861). They defined the condition as sclerosis of the posterior roots, the end-result of a chronic inflammatory process; and similar views as to the inflammatory origin of the degeneration were held by Charcot, Vulpian, Gull, and others. Von Leyden, however, in his celebrated monograph, Die Graue Degeneration der Hinteren Rückenmarks-stränge, 1863, combated the inflammatory origin of the degeneration, and maintained that it had more the characters of a simple atrophy, and that such indications as there might be of chronic inflammation in the membranes and vessels were only secondary or accidental. He regarded the process as a peculiar degeneration of the sensory tracts of the spinal cord

[1] The bibliography will be given at the end of the lectures.

[2] In reference to the term I would remark at the outset that but for their consecration by custom I should like to discard the term dorsalis altogether, and the still more barbarous adjective tabetic, in favour of tabes and tabid.

[3] Todd (Cyclopædia, vol. iii., p. 621) says that two kinds of paralysis may be observed in the lower extremities, "the one consisting simply in the impairment or loss of voluntary motion, the other distinguished by a diminution or total loss of the power of coördinating movements." In two cases of the latter affection he predicted disease of the posterior columns of the spinal cord, to which he attributed the faculty of harmonising the movements of the limbs with each other.

ascending generally from below upwards. At this time, however, he did not as he has done in later times, causally connect the degeneration of the posterior columns of the cord with that of the posterior roots or sensory nerves, though he specially noted their almost constant coincident affection. In fact in commenting on a case reported by Gull, to whom it seemed as if the degeneration of the posterior roots, caused by inflammation of the pia mater, had propagated itself to the posterior columns, he says explicitly: "But the view that the atrophy of the posterior roots caused by inflammation of the pia mater leads to a similar degeneration of the posterior columns is very unlikely. Moreover, the disease of the posterior columns progresses more from the posterior periphery and middle line rather than follows the distribution of the roots" (p. 152).

The next great advance in the pathology of tabes was made by Pierret (1871), who in the course of his investigations observed that the primary lesions of tabes consisted not in a degeneration of the posterior columns as a whole but "in two symmetrical islets of small extent situated in a special region of the posterior columns. ..... This region," he says, "which I propose to call the 'rubans externes' of the posterior columns, appears on transverse section in the form of two narrow bands skirting the internal aspect of the posterior horns. It appears to contain two orders of fibres—commissural and internal radicular. The sclerosed areas do not actually touch the posterior cornua, but are separated from them by tracts of healthy white substance, though they are connected by fibrous bands. The sclerosis, beginning in the middle of the rubans externes, tends to spread inwards towards the median column and outwards towards the posterior cornu." Tabes then came for a time to be considered a system disease, or sclerosis of the rubans, or bandelettes externes of the columns of Burdach. But at this epoch nothing was known as to the relation of the bandelettes externes to the posterior roots. Vulpian, however (1879), saw the difficulty of connecting the supposed primary disease of the bandelettes externes with the atrophy of the posterior roots. A primary degeneration of the posterior columns could scarcely, he maintained, lead to atrophy of the posterior roots the trophic centre of which was in the spinal ganglia. This would be a retrograde degeneration and opposed to the Wallerian law. He therefore regarded the atrophy of the roots as undoubtedly of primary origin. That of the bandelettes externes might perhaps be so also but only in so far as they contained fibres not directly continuous with the posterior roots themselves. He proposed to substitute for the formula "sclerosis of the posterior columns" "sclerosis of the posterior roots" as the primary basis of tabes. He thus inaugurated the radicular or root theory of tabes which is now entertained in one form or another by the majority of neuro-pathologists.

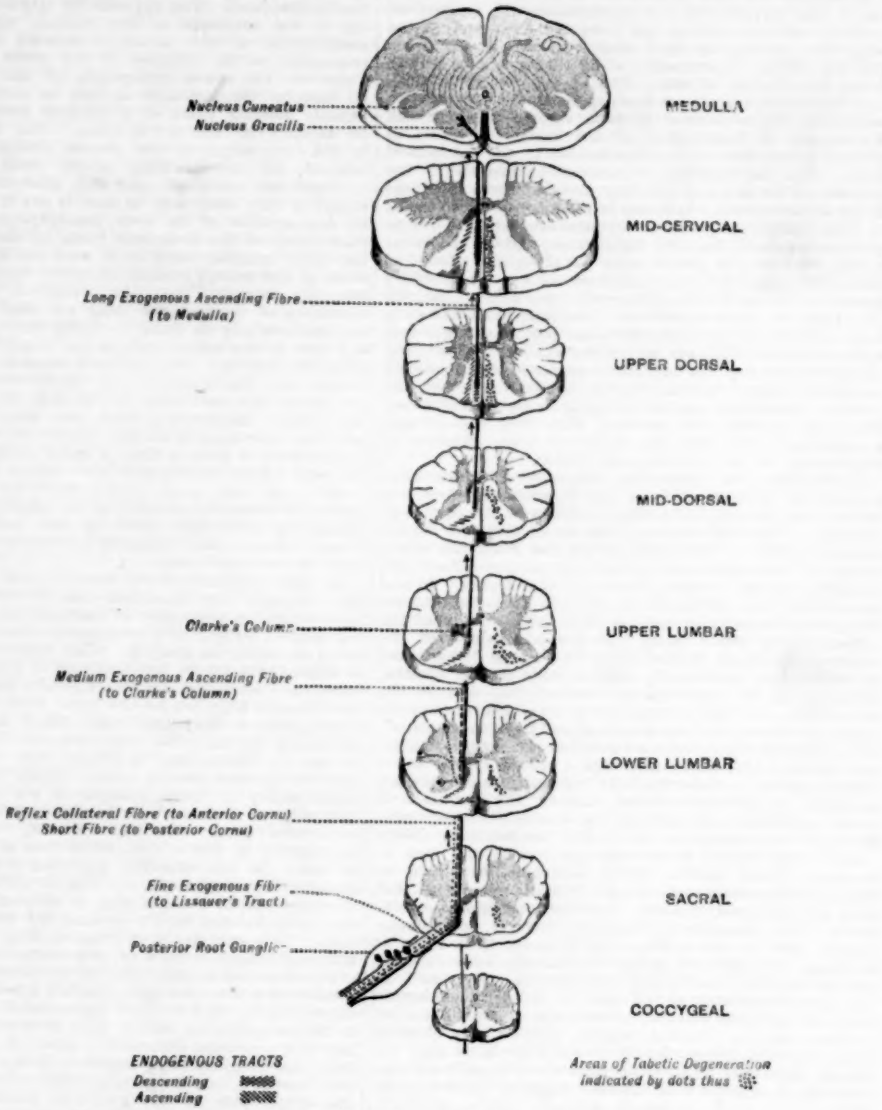
In order to follow the bearing of this theory on the pathological anatomy of tabes, it is necessary to make some preliminary remarks on the relation of the posterior roots to the posterior columns of the spinal cord. The facts on which this is based have been established mainly on the results of degeneration consequent on lesions of the posterior roots by disease in man and of experimental section of the posterior roots in animals, especially in monkeys. These we owe in part to the labours of Schiefferdecker, Schultze, Kahler and Pick, Singer and Munzer, and others, and notably to the careful experiments and investigations of Tooth, which he made the subject of his Goulstonian lectures before this College in 1889. The posterior roots emerging from their respective ganglia penetrate the cord in two divisions—an *external*, consisting of fibres of small calibre which enter the apex of the posterior cornu or zone of Lissauer and distribute themselves here, and secondly an *internal* division, formed of fibres of large calibre which alone take part in the formation of the posterior column. This division of the posterior root gives off short, medium, and long fibres. It occupies in the first place a crescentic area on the inner border of the posterior cornu (the *cornu-radicular zone* (Marie)) and gives off short fibres to the adjoining cells of the posterior cornu. With the advent of the next and succestive roots above, the lower roots are displaced from the cornu-radicular zone inwards towards the middle of Burdach's column and occupy a space elongated antero-posteriorly, which corresponds to what was termed by Pierret the bandelette externe. The bandelette externe is only the second stage in the course of the posterior roots. From this are given off the median fibres which form two principal groups. First, the sensitivo-reflex group or reflex collaterals of Kölliker, which arise mainly from the middle of the bandelette, and are distributed among the cells of the anterior cornu. Secondly, the fibres to Clarke's column. These emerge principally from the anterior aspect and if derived from the lowermost roots ascend a considerable distance before they finally reach their destination, inasmuch as the cells of Clarke's column do not descend below the second lumbar segment. Besides the short and median fibres above described there is another set of fibres which, instead of ending in the cord, ascend in the column of Goll as far as the nucleus gracilis of the medulla oblongata. These fibres appear to come from the posterior aspect of the bandelette externe and postero-lateral zone, and gradually pass inwards and ultimately reach the mesial septum. The lowest fibres are those which are nearest the middle line.

Only the long fibres from the lumbo-sacral and lower dorsal roots ascend in the column of Goll. Those from the upper dorsal and the cervical roots ascend in the column of Burdach—the lowermost nearest the column of Goll—and end in the nucleus cuneatus. The columns of Goll therefore are formed by the long fibres of the lumbo-sacral and lower dorsal roots and belong to the root system of the cord—the *exogenous* or extrinsic system (Marie). All these degenerate upwards on transverse section of the spinal cord at any part. But in addition to the exogenous, or root fibres, the posterior columns of the cord contain tracts which are probably commissural in function between different segments and different levels of the spinal grey matter. These tracts constitute the *endogenous* system of the spinal cord (Marie) and form two divisions—the ascending and descending. They only degenerate on destruction of the grey matter and remain intact after all the exogenous fibres consequent on destruction of the posterior roots have undergone degeneration. The ascending fibres occupy the *cornu-commissural* zone or ventral field of the posterior columns, lying posterior to the grey commissure and extending some distance along the inner aspect of the posterior cornua. These vary in size according to that of the horns of the lumbar, dorsal, and cervical regions, and degenerate *above* lesions of the grey matter. The descending system of fibres degenerates on the contrary *below* a transverse lesion of the grey matter. This system of fibres was first described by Schultze (1883) and is known in the cervical and dorsal regions as the "comma" tract. It occupies a position in the column of Burdach running obliquely in an antero-posterior direction, parallel to, but at some distance from, the internal border of the posterior cornu. Schultze described it as not reaching either the grey commissure or the posterior surface of the cord, but the Marchi method has shown that this is not quite correct. This comma tract was supposed by him to consist only of descending root fibres, but the researches of various pathologists, especially those of Gombault and Philippe, have shown that this comma tract is continuous from above downwards with other tracts which have been differently named according to their appearance in different parts of the cord—viz., the *septo-marginal* tract of Bruce and Muir in the lower dorsal region; the *oval field* of Flechsig on each side of the mesial septum in the lumbar region; and the *median triangle* of Gombault and Philippe in the sacral region.

These variously named tracts thus constitute one continuous system of descending commissural fibres, receiving and giving off fibres at different levels of the grey matter and connecting together the various segments as well as the upper and lower spinal centres with each other. The continuity of these systems with each other has been clearly demonstrated by Purves Stewart in a case of crush of the cervical cord.

We may now proceed to consider the degenerations characteristic of tabes and to inquire how far they correspond with the exogenous and endogenous systems of fibres above described. In a moderately advanced case of tabes one observes a notable atrophy of the posterior roots. These are thin, flattened, and greyish in colour, contrasting vividly with the white and plump anterior roots. This appearance is most marked in the roots forming the cauda equina. The posterior columns of the cord are also thinned and of a greyish, semi-transparent aspect and the posterior cornua are often similarly affected. The pia mater over the posterior columns more especially is frequently thickened and adherent. The changes are, as a rule, most pronounced in the lumbar and lower dorsal region but may in certain cases—so-called *cervical* tabes—be more or less limited to the cervical region. In advanced cases the whole of the

posterior roots and the whole of the posterior columns may be affected. If one examines a transverse section of the lower dorsal or upper lumbar cord in an early case one observes an area of degeneration occupying the middle third of the posterior column, extending from the posterior cornu forwards and inwards towards the posterior commissure. This area constitutes Pierret's bandelette externe and varies in breadth according to the number of posterior roots involved. The two bandelettes, not always symmetrical, zones, and still less in the cornu-commissural zone and oval fields bordering the posterior median septum. In more advanced cases all the posterior columns are degenerated, except the cornu-commissural zone and the oval fields of Flechsig. These form, as already remarked, the endogenous systems of the cord and only degenerate in very advanced cases in which the upper regions of the cord are invaded. The appearance of sections of the cord higher up will vary according as the degeneration of the posterior



Sections of spinal cord at various levels showing areas affected by tabetic degeneration.[4]

may meet almost in the middle line. They correspond to the middle stage of the traject of the posterior roots. From this part of the course, as we have seen, are given off the reflex collaterals to the anterior cornua and the fibres to the vesicular columns or columns of Clarke. These are the fibres first and specially affected in tabes.

For a considerable time after the degeneration has appeared in the bandelettes externes comparatively little degeneration may be visible in the cornu-radicular or root-entry zone, in the long fibres occupying the postero-external roots is confined to the lumbo-sacral region, or also implicates the dorsal. In the first case the only degeneration visible is in the posterior median columns which contain the long fibres from the lumbo-sacral region in their course up to the nuclei graciles of the medulla oblongata, all the short and medium fibres having by this time found their primary termination in the cells of the posterior and anterior

[4] The lectures were also illustrated with lantern slides, which are not here reproduced.

cornua and in the columns of Clarke. The appearance presented will be that seen in the figure which I throw on the screen. If, on the other hand, the dorsal roots are also affected we get in addition degeneration in the columns of Burdach, varying in extent according to the number of roots involved, and we may have a degenerated zone in Burdach's column separated from that of the column of Goll by healthy tracts corresponding to healthy roots entering at a lower level.

In the cervical cord if only the lower dorsal and lumbosacral roots are affected the degeneration will be confined to Goll's columns, as these are composed exclusively of the long fibres passing up from these regions. If the upper dorsal is affected degeneration of Burdach's column will be found immediately adjoining that of the column of Goll, and if the cervical roots are also implicated the degeneration will occupy the columns of Burdach, varying in extent with the amount of degeneration of the roots. In cases of cervical tabes there is no degeneration in the columns of Goll. The degeneration is confined exclusively to the columns of Burdach and the long fibres of these roots end in the nuclei cuneati. It is only in the most advanced stages of tabes that all the posterior columns, exogenous as well as endogenous tracts, are alike degenerated. Of the exogenous system we have seen that they are not all equally affected at the same time. The first incidence of the degenerative process is on the medium fibres—viz., the reflex collaterals and those to Clarke's columns. The long fibres which, in large measure at least, constitute the postero-external root zones are more resistant and often exhibit scarcely any degeneration when the bandelettes externes are completely sclerosed. There is some doubt, however, whether the postero-external root zones are composed only of long fibres. There are grounds for believing that they contain also endogenous fibres which are relatively more resistant to degenerative change (Schmaus and Sacki).

Similarly the fine fibres of the posterior root which enter the zone of Lissauer often escape degeneration when it is already well marked in the medium fibres of the column of Burdach. The tabetic degeneration would therefore appear to be selective in character, unlike the Wallerian which affects all indiscriminately, attacking in succession fibres and tracts of, perhaps, different functional significance. In this aspect it has been attempted to establish a relation between the tabetic degeneration and the fœtal differentiation of the various tracts which enter into the composition of the posterior columns as determined by the stage of development at which they respectively receive their myelin sheaths. Flechsig, by the myelinisation method, has divided the posterior columns into six main divisions which receive their myelin sheaths at four successive stages of fœtal development. He thus divides the posterior columns into an anterior, middle, and posterior root zone; this, again, into a medial and a lateral. Added to these are Goll's column and a mesial tract bounding the posterior median fissure. The first tract of fibres to myelinate—his anterior root zone—corresponds with the cornu-commissural zone of Marie; the last to myelinate—his postero-lateral zone—corresponds with the zone of Lissauer. These various tracts constitute, according to Flechsig, elementary systems, and it has been assumed that they are composed of fibres of common functional significance. The researches of Trepinski, however, on the same subject differ in many important respects from those of Flechsig, and there are many discrepancies between both, and the results of secondary degeneration. Nor has it as yet been satisfactorily shown that the tabetic degeneration coincides precisely with any of the fœtal systems described by these authors. Further research, however, may clear up many doubtful points, for it is not improbable that the tabetic degeneration follows the lines of functionally different fibres which myelinate at different stages of fœtal development.

The tabetic degeneration so evident in the posterior columns and posterior roots appears to stop short at the spinal ganglia. The sensory nerves distal to the ganglia have a normal appearance and normal structure. But not infrequently, as has been shown by Westphal, Pierret, Déjerine, and others, the finer peripheral ramifications in the skin, muscle, &c., undergo atrophy similar to that in the intra-medullary terminations. Nor is the process limited to the spinal cord and the spinal nerves. The optic nerve is frequently affected; and occasionally also other cranial nerves. Degenerative changes have also been demonstrated in the ciliary ganglia and in the sympathetic nervous system, particularly in the cardiac plexus. These will be considered more in detail in connexion with the physiological pathology of some of the more prominent symptoms of tabes.

If we now turn from the more gross anatomy of tabes and consider the intimate nature of the process we find, according to the most modern research, that its essential character is a progressive dystrophy, or demyelinisation and ultimate destruction of the nerve fibres. The myelin sheath, as shown by the Marchi method, breaks up, becomes granular, and finally disappears. The appearances vary somewhat according to the acuteness of the process, but in general a proliferation of the neuroglia network occurs only in proportion to the atrophy of the nerve tissue proper. There is no active hyperplasia of the neuroglia and no vascular changes such as can be considered as the primary starting point of a sclerosis leading secondarily to atrophy of the nerve fibres. The Marchi method in the early stages of the process reveals the degeneration of the myelin long before proliferation of the neuroglia has occurred, and such sclerosis as ultimately ensues is only what may be seen in any organ consecutive to degeneration of its true parenchyma. The obvious relationship of the exogenous tracts of the spinal cord to the spinal ganglia, being as it were the central prolongations of the sensory neurons of which they are composed, naturally suggests that the cause of the progressive dystrophy of the posterior roots and their intramedullary terminations may be found in some morbid alteration of the cells of the spinal ganglia, the trophic centres of the fibres in question. For, as Marie remarks, it is difficult to believe that the branches of a neuron, whether central or peripheral, and performing the functions only of conductors, can undergo degeneration apart from that of the cell body which is their trophic centre. Therefore, in every case of degeneration of a nerve fibre, whether central or peripheral, the point first to investigate is the "cellule malade." Much research has been spent on this point but the conclusions reached as to morbid changes in the spinal ganglia, or their constituent cells, have been far from harmonious. Gross changes such as were described by Bourdon and Luys in one case are uniformly absent.

As regards the cells Marie himself found in one case that they appeared less numerous than normal, that some of them seemed to show signs of degeneration, and that there was distinct atrophy of a considerable number of the nerve fibres traversing the ganglia. Some support has been given to Marie's view by the investigations of Wollenberg, Oppenheim and Siemerling, Stroebe, Redlich, Marinesco, Thomas and Hauser, &c.; but on the other hand Schaffer, Juliusberger, Meyer, Mott, and many others have found them practically normal. The alterations which have been described by Wollenberg, Marinesco, and others who have obtained positive results consist mainly in chromatolysis, pigmentation or fatty changes in the cells, occasional deformity or diminution in numbers, and increase of the connective tissue elements. Köster, the most recent investigator on this subject, states that in the early stages of tabes he has observed appearances similar to those described by Wollenberg, but that in more advanced cases there are marked changes, such as chromatolysis, pigmentation, abnormalities in the nucleus, and deformation of the cells. They were similar to those resulting in course of time from experimental section of the posterior roots in animals.

It is therefore doubtful whether such changes as have been discovered in the spinal ganglia afford a sufficient anatomical substratum for the amount of degeneration, more particularly in the posterior roots and in their intramedullary terminals. And it is considered (Schmaus) a powerful argument against the spinal ganglion being regarded as the primary origin of the dystrophy, that the peripheral process as it emerges from the distal pole of the ganglion, practically shows no abnormality (with the exception, perhaps, of some of its cutaneous terminals); while the central process, the posterior root, may be degenerated right into the ganglion itself. Whether these and other arguments are altogether valid against the primary ganglionic origin of the tabetic process will be considered later, but it must be admitted that the anatomical changes hitherto actually demonstrated in the ganglion cells are altogether incommensurate with the degree of degeneration of the processes (central and peripheral) as compared with that observable in other forms of cell degeneration, such, for instance, as in the multipolar cells of the anterior cornua in

atrophic spinal paralysis. Instead of regarding the spinal ganglia as the primary origin of the degeneration of the posterior roots and exogenous medullary tract von Leyden and Goldscheider are inclined to look upon the peripheral nerve endings, which not infrequently exhibit dystrophic or neuritic changes, and are naturally more exposed to traumatic influences, as more probably the starting point of the process. It is known that after amputations and section of nerves atrophy occurs in the posterior horns, posterior columns, and also in the anterior horns of the spinal cord. This is the form of degeneration termed retrograde and is probably due to the cessation of the normal influences which serve to excite and maintain their functional activity. And it has been shown by Lugaro, Cassirer, and most recently by Warrington, that marked chromatolytic changes occur in the cells of the spinal ganglia on section of the sensory nerves and of certain cells in particular, according to the kind of afferent nerve, muscular or cutaneous, which is divided. It is assumed, therefore, by the supporters of the peripheral origin of tabes that changes, organic or functional, in the spinal ganglion cells may be induced by neuritic or other processes in the peripheral nerve endings, and thus secondarily lead to degeneration of the posterior roots and posterior columns. It has not, however, been demonstrated that degeneration of the peripheral nerves always precedes that in the cord, nor has it been shown that such peripheral degeneration is a constant feature of the morbid anatomy of tabes, which it ought to be if the theory is at all well founded. Nor does it seem likely that neuritic or other degeneration, ascending from the periphery, can induce such dynamical or organic impairment of the ganglion cells as the theory postulates without making itself evident at the point where the sensory nerves enter the ganglia. The peripheral theory of the pathogeny of the tabetic degeneration of the spinal cord has therefore to overcome many serious objections before it can be accepted as at all a satisfactory one.

Other pathologists are of opinion that they have discovered the origin of the tabetic process in inflammatory conditions of the meninges affecting the posterior roots. The theories of Nageotte and of Redlich and Obersteiner are the most important in this relation. Nageotte, whose views have received a large amount of support, especially in France, has called attention to an anatomical disposition of the posterior roots which renders them peculiarly liable to noxious influences; he holds that in tabes there is a diffuse chronic meningitis which has all the characters of syphilitic origin—viz., infiltration with lymphocytes and plasma cells, especially round the veins, a meningomyelitic affection of the periphery of the cord, medulla, and even the cortex cerebri. This general meningitis induces the degeneration characteristic of tabes by implicating the spinal roots at the point of their emergence from the dural sac. The anterior and posterior roots after leaving the spinal cord traverse the subarachnoid space and at the point of exit from the dural sac receive a sheath both from the dura and arachnoid which constitutes the perifascicular sheath of the roots and beyond the ganglion the two roots unite to form the mixed nerve. The portion which lies between the ganglion and the dural sac, which varies in length in different regions, he terms the radicular nerve. The perifascicular sheath, derived from the dura and the arachnoid, divides the radicles into compartments and the intrafascicular tissue is continuous with the pia mater. The lymphatic spaces of the radicles communicate with the subarachnoid space and constitute a narrow and complicated channel between the great lymphatic sac and the efferent vessels. Owing to this disposition the radicles are specially liable to injury by meningeal inflammation and toxins circulating in the cerebro-spinal fluid. Hence is developed a transverse interstitial neuritis, which specially affects the posterior radicles; and the anterior also to some extent, which, however, is only transient.

In consequence of this neuritis secondary degeneration is set up in the intramedullary continuations of the posterior roots and spreads back to the spinal ganglia. The process, however, is not a true Wallerian degeneration but a mere dystrophy, or lowered vitality, which affects more particularly the short and medium fibres of the posterior roots. In support of his views Nageotte adduces the lymphocytosis of the cerebro-spinal fluid which occurs in tabes, to which I will call your attention presently. But in the meantime Nageotte's theory appears to offer such a simple explanation of the tabetic degeneration that it seems almost a pity to subject it to destructive criticism. It is, however, open to the same objections as can be urged against the theory of Redlich and Obersteiner, in that the meningitis, which it postulates, is not a constant phenomenon and is perhaps more frequently absent than present; and when it exists is more often of the character of a secondary thickening than an inflammatory process. And, further, it has been found in the early stages of tabes that the intramedullary degeneration is often well marked when the posterior roots exhibit no appreciable change and no indications of a local neuritis. The practical escape of the anterior roots is, I think, a fatal objection to Nageotte's theory. That the neuritis which he also finds in the anterior radicle should be evanescent, while that of the posterior radicle leads to such profound intramedullary degeneration is unintelligible, and is, moreover, opposed to the usual relatively greater affection of the motor than of the sensory fibres when neuritis attacks mixed nerves. Redlich and Obersteiner maintain that at the point where the posterior roots penetrate the pia mater there is a constriction which constitutes a *locus minoris resistentiæ*, and that in consequence of meningeal inflammation and the retraction of cicatrisation, as well as by thickening of the closely adjacent blood-vessels, the posterior roots become as it were strangled. Hence ensues degeneration in the intramedullary exogenous tracts, followed at a later stage by that of the posterior roots in a retrograde manner. Redlich and Obersteiner's view has the merit of harmonising better with the more common starting point of the tabetic degeneration than that of Nageotte, but as has been remarked, the meningitis basis on which it rests is not very substantial. It is not universally present, nor is meningitis, syphilitic or otherwise, when it does occur, a common cause of intraspinal degeneration by implication of the posterior roots. That such a result is possible and perhaps actually occurs in some cases may be admitted, but it is extremely rare. The symmetrical and segmental character of the tabetic degenerations, which it would be difficult to correlate with any, so to speak, brutal meningeal inflammation, and the occurrence of degenerations elsewhere, such as in the optic nerve, ciliary ganglion, and sympathetic system, are all formidable arguments against the meningitic origin of tabes, whether at the point maintained by Nageotte or that of Redlich and Obersteiner. But that the so-called "ring of Obersteiner" is a *locus minoris resistentiæ*, or specially vulnerable point, in the course of the posterior root fibres has been argued with much force by Orr and Rows in their memoir on the system lesions of the posterior columns in General Paralysis. At this point the extra-medullary fibres of the posterior roots lose their neurilemma sheath and the myelin sheath is also much thinned. That the absence of the neurilemma sheath renders the nerve more vulnerable is probable from the researches of Kennedy, Bethe, Ballance, and Purves Stewart, which have demonstrated the importance of the neurilemma and its cells in the nutrition and regeneration of nerves. These show that even in the distal segment of a divided nerve regeneration of the axis cylinders and medullary sheaths takes place, although the full maturity of the new nerve fibres is not attained until union of the proximal and distal segments occurs and the fibres become functionally continuous with each other. This regeneration is dependent on the cells of the neurilemma sheath. Where these are absent, as in the intraspinal fibres, regeneration does not occur and it is probable, therefore, that the absence of the neurilemma cells is the cause of the greater proclivity to degeneration of the intra-medullary terminals than of the other branches of the sensory proto neurone in the tabetic dystrophy.

It has been shown also that degeneration of the intramedullary root fibres similar to those of tabes may occur in the course of cerebral tumours, diabetes, anæmia, and other cachectic states (Homén, Nageotte, Williamson, Bruce, Erbsloh, &c.). The degeneration extends from Obersteiner's ring into the reflex collaterals and fibres passing into Clarke's columns. Whether it begins first in the terminal fibres and gradually extends backwards, or *vice versâ*, is the subject of some difference of opinion. Orr and Rows hold that it commences at Obersteiner's ring and extends centrifugally, while Nageotte considers that the terminal fibres of the reflex collaterals and those of Clarke's columns are first affected. The more recent investigations of Spielmeyer by means of Cajal's new axis cylinder stain are in favour of the view that the terminal fibres which aboresce around the cells of Clarke's columns as well as those of the posterior column nuclei first show signs of degeneration. This is followed by

glia proliferation in proportion to the destruction of the nerve filaments. Whether we regard the intra-medullary degeneration as centripetal or centrifugal or more probably simultaneous it is clear that this portion of the posterior root is more liable to show signs of impaired nutrition at an early stage than either the extra-medullary portion or the cells of the spinal ganglia. Some conditions probably exist favouring the incidence of noxious influences on this portion of the sensory proto-neurone. In this connexion Marie and Guillain have laid great stress on the peculiarities of the lymph circulation in the posterior columns of the spinal cord. They maintain that in the pia mater of the posterior columns between the outer and inner layer there exists a lymphatic system the spaces of which communicate with those of the posterior columns but are independent of those of the antero-lateral columns. In this system the current of lymph is upwards and towards the central canal. In tabes they have found this system dilated, and, by the Marchi method, black granules in the cells of the ependyma in cases where the central canal is permeable. They attribute the condition to a syphilitic affection of the posterior lymphatics and derive the lymphocytosis of the cerebro-spinal fluid from the elements of this system. That noxious substances or toxins originating in the periphery ascend to the spinal cord more readily by the posterior than by the anterior roots has been shown by Homén and also by Orr and Rows and that in this way, or by peculiarities in the lymphatic circulation in the cord, the posterior roots and posterior columns are specially exposed to injury is extremely probable. But that there is in tabes a posterior meningitis of a syphilitic character as maintained by Marie and Guillain is not generally admitted. It is not supported by the results of anti-specific treatment nor can the lymphocytosis of the cerebro-spinal fluid be adduced as a conclusive argument in its favour.

The Erasmus Wilson Lectures

ON

THE DISTRIBUTION AND RECOVERY OF PERIPHERAL NERVES STUDIED FROM INSTANCES OF DIVISION IN MAN.

Delivered before the Royal College of Surgeons of England on March 12th, 14th, and 16th, 1906,

BY JAMES SHERREN, F.R.C.S. ENG.,

ASSISTANT SURGEON TO THE LONDON HOSPITAL; SURGEON TO THE POPLAR HOSPITAL FOR ACCIDENTS.

LECTURE III.[1]

Delivered on March 16th.

MR. PRESIDENT AND GENTLEMEN,—From time to time instances of rapid return of sensibility after secondary suture have been reported, those recorded by Bowlby,[2] Ogston,[3] MacCormac,[4] Langenbeck,[5] Sheppard,[6] Berger,[7] Tillaux,[8] and Jessop[9] being the most noteworthy of the older ones. Ballance,[10] speaking of secondary suture, has said: "The immediate results depend largely upon the length of time which has elapsed since the primary injury. If the period has been long enough (four weeks at least) to permit of regeneration in the distal segment to be fairly advanced an immediate return of sensation is often observed." Kennedy,[11] who has written at length on the subject, has given us a full account of his methods of testing. He says: "Previous to suture the distribution of the nerve is examined for sensation to touch, pain, and thermic difference, and marked on charts." He also points out that "care was taken to see that the patient experienced the sharpness of the stimulus and not the touch alone." But it has been noticed in several cases that the sensation restored at a very early date is again lost. Examples of this have been recorded by Bowlby,[12] Le Fort,[13] and others. Mr. Ballance has very kindly allowed me to quote an unpublished case of this nature. After secondary suture of the external popliteal in a man, aged 30 years, distinct return of sensibility was noticed one and a half hours later. But five months after suture, sensibility was lost to the same extent and degree as before operation. Mott, Halliburton, and Edmunds[14] have criticised these cases as follows: "The statement of clinical observers that in man sensation rapidly returns after 'freshening up' and suturing together the ends of a nerve which has been divided a long time previously would be very valuable evidence in favour of the 'peripheral theory' if it was entirely trustworthy. A case recently in King's College Hospital was carefully observed and throws a useful light on this subject. A short time after the operation of uniting the ends of the nerve together the man stated he was again able to feel but these sensations rapidly subsided and sensation did not really return until months later. The preliminary sensation was doubtless subjective, the 'freshening up' of the central end of the nerve had evidently caused stimulation of the fibres lasting for some hours, and the sensations so produced were referred by the patient's mind to the original terminals of the nerve." But we are not told if the patient was able to appreciate stimuli to which he was previously insensitive and, if so, what variety of stimuli these were. Without these facts it is impossible to accept the conclusion at which these observers arrived from the study of this case. Kennedy,[15] criticising their statement, points out that surgeons have not relied upon subjective evidence when reporting cases of this character. Professor Gotch,[16] at the discussion on Kennedy's paper at the meeting of the British Medical Association in 1904, said that he "doubted the validity of the so-called immediate recovery of sensation which appears to occur within a few days of secondary suture." He further stated that "he had examined several such cases and was struck by the fact of the apparent hyperæsthesia to such tests as needle pricks, whilst a far more delicate test, that of stroking the hairs over the affected region, evoked no sensation at all." Gotch has described the condition of sensibility of the intermediate zone or of a part in the first stage of recovery. If from a condition of insensibility to prick, the part passed into the condition which he has described a few days after suture, it is good evidence that, at any rate, sensibility to prick may return rapidly. But unfortunately we have no details of these cases.

Experimental work does not help us to understand the return of sensibility within a few hours or days of secondary suture. Head and Ham[17] have shown that after union of the ends of a nerve which had been separated for at least two months and contained embryonic fibres 28 days elapsed before it would conduct impulses. As yet I have observed no instance of this rapid return of sensibility; the earliest date after secondary suture at which sensibility to prick began to return was 30 days. It is noteworthy that most of the recorded instances of rapid return have been after suture of the ulnar nerve, after division of which few mistakes can arise in the interpretation of sensibility. We need a fully reported case of this character in which the condition of the various forms of sensibility has been noted from day to day, and later from week to week, until complete recovery. For the present we must be content to record these cases of early return of sensibility after secondary suture; we must leave their explanation to future research.

It will have been noticed from the cases which I quoted in my last lecture (see Table I.) that wide variations occurred in the times at which sensation and motion reappeared. These variations seemed to bear no relation to the interval which had elapsed between the injury and operation. For example, secondary suture of the median nerve was performed nine weeks after division; sensory recovery did not

[1] Lectures I. and II. were published in THE LANCET of March 17th (p. 727) and 24th (p. 809), 1906, respectively.

[2] Injuries and Diseases of Nerves.

[3] Brit. Med. Jour., vol. i., 1881, p. 391.

[4] St. Thomas's Hospital Reports, vol. xv., 1885.

[5] Deutsche Zeitschrift für Chirurgie, 1883, Band xviii., S. 34.

[6] Canada Medical and Surgical Journal, vol. xvi., 1886-87, p. 350.

[7] Bulletin de l'Académie de Médecine, 1893, p. 293.

[8] Gazette des Hôpitaux, 1884, p. 585.

[9] Brit. Med. Jour., vol. ii., 1871, p. 640.

[10] Transactions of the Royal Medical and Chirurgical Society, 1902, p. 280.

[11] Philosophical Transactions of the Royal Society, 1897, 188B, p. 287.

[12] Injuries and Diseases of Nerves, p. 201.

[13] Bulletin de l'Académie de Médecine, 1893, p. 430.

[14] Journal of Physiology, vol. xxxi., p. 7.

[15] Brit. Med. Jour., 1904, vol. ii., p. 731.

[16] Ibid., p. 732.

[17] Journal of Physiology, vol. xxxii.

commence for 24 weeks and was not complete in 116. In another instance 95 weeks elapsed between the injury and operation, yet sensory recovery commenced on the thirtieth day. In the first case the muscles reacted to the interrupted current 90 weeks after suture but did not act voluntarily until six months later; in the second they acted voluntarily and reacted to the interrupted current 30 weeks after suture. Both these cases healed by first intention. But in the first the nerve was divided through an extensive wound at the wrist which suppurated severely and did not heal for seven weeks, in the second through a small punctured wound. I believe that these variations are due to suppuration or inflammation at the time of the original injury, with resultant fibrosis of the nerve.

The statements which have been made respecting the influence upon recovery exercised by the interval between injury and operation vary. Howell and Huber,[18] from a study of reported cases, say: "In general ..... the prognosis is better and the time of recovery shorter the sooner after the injury the nerve is sutured." Kennedy[19] states that "the interval of time necessary for recovery of the muscles after an operation on a nerve undertaken not less than a month after the accident is not the same for each case. If the nerve be sutured or liberated within one month of the accident commencing recovery of motion may be expected at eight weeks after the operation; if within two months, then in about three months; if within three months, then three or four months ought to see recovery commencing; while if five or six months elapse before operation is undertaken, then seven to eight months will probably elapse before the patient will exhibit signs of returning motion. When the interval before operation increases by something like a year, then the interval which elapses before recovery shows itself would appear to be constant, no matter how much greater the interval which has elapsed before operation." And again:[20] "Nothing can be of more importance in giving a prognosis than the interval between the accident and operation. If this interval is within three or four months recovery may be expected, but if it extends to almost a year recovery of the muscles is unlikely." But Kennedy has considered together instances of secondary suture and liberation of nerves from pressure. I believe that the times have been invalidated by the inclusion of these latter cases, which, as I shall show later, recover more quickly than cases of secondary suture.

I am in absolute agreement with Bowlby's[21] experience. He points out that the interval between the time of suture and the time of restoration of sensation and motion is irregular and has no direct connexion with the length of time which has elapsed since the injury in cases where an operation has not been delayed for as much as two years.

PROGNOSIS AFTER SECONDARY SUTURE.

It has been said[22] that after division of the nerves of the lower extremity recovery takes place much more slowly than after a similar injury of the upper limb. In one instance of secondary suture of the external popliteal nerve which I have watched for four years voluntary power is still absent, and two and a half years after secondary suture of the sciatic sensory recovery was still in the first stage and there was no sign of motor recovery.

Individual knowledge of the after-results of suture of the nerves of the lower extremity is likely to be small and I endeavoured to find what had been the experience of others; few mistakes are likely to arise in interpreting the recovery of the muscles after these injuries. I have only been able to find six cases (four sciatic and two external popliteal) reported at all fully, although there are many mentioned in Chipault's work. The well-known case of Wheelhouse[23] was operated upon nine months after a scythe wound of the thigh. Writing three years later he says: "During the past winter he has worked in the fields as he was wont to do before his accident, requiring neither stick, nor support, nor help of any kind, and though the limb remains greatly inferior in size and nutrition to the opposite one it is to all intents and purposes a useful member again." In Langenbeck's[24] case suture was performed two and a half years after division; no recovery had taken place four years later.[25] Roddick[26] sutured the sciatic 18 months after division, and reports as follows: "Motion is not yet completely restored, but he is still improving and can now (two years after suture) walk about without a stick." Markoe[27] reports a case sutured by Weir nine years after the injury. Two years and four months later "no change in mobility but a gain in general sensation." Morton[28] sutured the external popliteal two months after a gunshot wound. The after history is given as follows: "On March 8th, 1881 (three and a half months after the operation), the patient was discharged cured." But three years after the injury a further note says that "there is slight power over the ankle, none over the toes, muscles still wasted." Gleiss,[29] has reported suture of the external popliteal nerve four months after the injury. As no improvement had taken place five months after suture the wound was explored. At the point of suture a swelling about 3 centimetres long and of the thickness of a lead pencil was found adherent to surrounding parts. This was excised and the ends were reunited. 14 months later the muscles acted voluntarily and reacted to the interrupted current applied through the nerve. This last case and the first certainly recovered; Langenbeck's and Weir's were failures; with regard to the others while some motor recovery ensued it was certainly not complete. Owing to the kindness of Mr. Ballance and Dr. Purves Stewart I am able to report another successful instance of secondary suture of the external popliteal nerve. Operation was performed four months after a gunshot wound. The nerve was found to be completely divided; the ends were brought together after freshening. Voluntary power began to return 11 months later and three and a half years after operation no wasting was present and all the muscles supplied by the nerve were acting normally. The old anæsthetic area was still marked out by changed sensibility, "pin pricks were accompanied by tingling." There is no doubt that motor recovery was complete but sensory recovery was not perfect.

I was able to investigate the condition of six cases of secondary suture from three to nine years after operation at the London Hospital. In four of these the ulnar nerve had been sutured; in one only, a case of division of the nerve below its dorsal branch, was sensory recovery present; in the other three a line of changed sensibility to prick was present, with deficient appreciation of the compass test. All recovered muscular power and irritability to the interrupted current. In one instance, three years after secondary suture of the median nerve, an area of changed sensibility to prick persisted, although the muscles had recovered perfectly. The other patient was seen four and a half years after secondary suture of the musculo-spiral nerve. All the muscles except the extensor ossis metacarpi pollicis, acted normally and reacted to the interrupted current. Thus, out of 16 cases of secondary suture of the nerves of the forearm—ten watched from suture to recovery and six seen from three to nine years after suture—muscular recovery ensued in all. But in no instance in which the whole of the nerve had been divided did complete sensory recovery result. In two cases of secondary suture of the nerves of the lower limb, two and a half and four and a half years after operation, no muscular recovery had taken place. In the first instance after secondary suture of the sciatic the first stage of sensory recovery was not complete; in the second, after suture of the external popliteal, the limb was still in the third stage of recovery. In the seven cases which I collected one we cannot reckon, as nine years had elapsed between injury and suture. In the other six motor recovery certainly ensued in three. There can be no doubt that the prognosis is less favourable after secondary suture of the nerves of the lower limb than after a similar operation on the upper limb.

The question now arises, How long after division of a nerve is it possible to perform secondary suture with hope of muscular recovery? Although suture has been performed at long intervals after the injury the reports of the condition of the muscles before operation and of their progress after operation are so meagre that few conclusions can be drawn. Jessop's[30] case of secondary suture of the ulnar nerve nine years after division seems to have been

[18] Journal of Physiology, vol. xiv., p. 48.
[19] Brit. Med. Jour., vol. ii., 1904, p. 1065.
[20] Ibid., vol. ii., 1868, p. 1399.
[21] THE LANCET, July 26th, 1902, p. 198.
[22] Deutsche Chirurgie, Lieferung 24B., S. 19.
[23] Brit. Med. Jour., 1873, vol. ii., p. 210.
[24] Deutsche Zeitschrift für Chirurgie, Band xviii., S. 341.
[25] Berliner Klinische Wochenschrift, 1880, Nr. 8.
[26] Montreal Medical and Surgical Journal, 1886, p. 353.
[27] New York Medical Journal, vol. xli., 1885, p. 300.
[28] Philadelphia Medical Times, 1884, p. 465.
[29] Beiträge zur Klinischen Chirurgie, Band x., 1893, S. 387.
[30] Brit. Med. Jour., vol. ii., 1871, p. 640.

followed by some sensory recovery. The last note, nine months after suture, says, "the muscles have to a certain extent re-formed." Recently Chaput[31] showed a case at the Société de Chirurgie on whom he had performed secondary suture of the ulnar nerve 14 years after its division. He states that the anæsthesia had disappeared 15 days after suture and that the interossei contracted three months later. But these accounts are too vague to be of use to us.

An interesting series of cases has been recorded by Bowlby.[32] In these suture was performed at times ranging from 12 years after division downwards. He came to the conclusion that muscular recovery was not likely to be marked if operation was delayed longer than two years and that no instance of perfect motor recovery had been reported after four years. This expresses accurately my views. But further study is necessary before we can say more than "not likely." In expressing an opinion on the likelihood of recovery we must bear in mind the nature of the original injury, if suppuration had occurred, and must also examine carefully the electrical reactions of the muscles. In a favourable case there seems to be no reason why these limits should not be considerably extended.

From a study of 80 recorded cases of secondary suture Howell and Huber[33] came to the conclusion that 38 per cent. were successful, 50 per cent. were improved, and 12 per cent. were failures. Willard[34] from the study of 130 cases collected from the literature said, "Within a year good results may be expected." But the results are better than given by Howell and Huber. Willard's statement is too indefinite.

To sum up. Recovery, both sensory and motor, will take longer than after primary suture. Although the first sign of sensory recovery may be noticed at an earlier date it is not to be expected before five or six weeks. Up to two years from the time of injury muscular recovery is likely to ensue, and no relationship exists between the time after division at which the suture is performed and the time at which recovery commences. Beyond this date perfect muscular recovery is unlikely to occur. Suppuration in the original wound delays recovery, both motor and sensory, to a considerable extent.

Out of 18 cases of secondary suture watched for a sufficiently long period muscular recovery ensued in all the instances in which a nerve of the upper limb was sutured. But in no case (except in one instance of division of the ulnar nerve below its dorsal branch) was complete sensory recovery seen, although one patient was examined up to nine years after suture. In the case of one of the nerves of the leg or the musculo-spiral or circumflex this is a matter of no moment, but it influences materially the opinion which we have to give after secondary suture of the median or ulnar nerves. After division of one of these nerves and secondary suture it is unlikely that sensibility will ever be completely restored as it is after primary suture. Taken on the whole, the prognosis is less favourable than after primary suture.

To summarise the main facts of recovery. After primary suture recovery will ensue, provided the wound heals by first intention or by aseptic granulation. Sensory recovery will follow well-defined stages, sensibility to prick first being restored to the whole affected portion, followed after an interval, which varies with the distance from the periphery at which the nerve is divided, by sensibility to light touch; finally complete sensory recovery ensues. Voluntary power and electrical excitability will be restored to the paralysed muscles at about the same date, varying with the distance of the point of section from the periphery.

After secondary suture recovery follows the same stages but usually takes a much longer time, but the first sign of return of sensibility to prick may be noticed at an earlier date than after primary suture. No correspondence exists between the time after division at which the nerve is sutured and recovery, certainly up to two years. Sensory recovery is apt to be incomplete and not to progress beyond the second stage.

In conclusion, after both forms of suture, muscular recovery may be perfect, but whether the muscles regain their full power will depend upon the care which is taken to avoid the development of contractures in the opponent muscles. After primary suture perfect restoration of sensibility may occur; after secondary suture it is unlikely.

Secondary suture in most cases is an avoidable operation. In the cases of injuries to the nerves at the wrist, which form the great bulk of the cases with which we have to deal, secondary suture, meaning as it does the improbability of complete sensory recovery, should become a thing of the past. Careful examination of the sensory condition in these cases will lead to the correct treatment. In those situations in which subcutaneous injuries are common and in which primary suture is, in most cases, out of the question the prognosis differs little from that after primary suture, for the nerves usually involved are the musculo-spiral and the external popliteal. In the former case there is usually no sensory loss, in the latter the persistence of an area of changed sensibility to prick and failure to appreciate the compass test is a matter of no moment.

BEARING OF THE PHENOMENA OF RECOVERY UPON THE THEORIES OF REGENERATION.

It will, perhaps, be profitable now to see what light these facts throw upon the experimental results of nerve section and suture. Into the minute changes which follow it would be out of place to enter here. That the question is surrounded by many difficulties is evident from the contradictory results obtained by eminent investigators. But all recent writers are agreed up to a certain point. At a time after division, varying with the animal used and its age, whether union with the central end has taken place or not, proliferation of the neurilemma leads to the formation of a band of spindle-shaped cells, called by different observers band fibres, embryonic fibres, and neuroplastic fibres. Considerable difference of opinion exists with regard to the further changes which take place in a nerve separated from its own central end. Ballance and Purves Stewart,[35] Kennedy,[36] Bowlby,[37] Langley and Anderson,[38] Bethe,[39] and others have found axis cylinders clothed with medulla. But Langley and Anderson have brought forward evidence to show that the formation of these axis cylinders was due to union with the central nervous system by means of nerves in the cut tissues around. "We find," they write, "that all the medullated fibres which re-form in the peripheral end of a nerve degenerate when the nerves, which run to the tissues near the cut end, are cut near the spinal cord: in other words, ... all the medullated fibres in the peripheral end of the cut nerve were fibres which had become connected with the central nervous system." Their experiments seem conclusive and to explain the varying results which have been obtained.

Head and Ham,[40] using an isolated portion of a purely sensory nerve (the radial) in cats, failed to observe axis cylinders at a period of 540 days after section. They consider that, after division, the nerve falls into a resting stage if precautions be taken to prevent its union to the centre. In this stage it consists of a mass of spindle-shaped fibres, each with an elongated nucleus. Howell and Huber, and more recently Mott, Halliburton, and Edmunds[41] failed also to obtain any evidence of the formation of axis cylinders in the peripheral end of a nerve completely separated from its centre. Bethe in adult dogs was unable to observe new axis cylinders in the peripheral end of the nerve 86 and 100 days after division and separation from its central end, although he could demonstrate them in young animals.

After division and primary suture in cats, medullated fibres make their appearance about the third[42] or fourth week. On the other hand, if suture be delayed until two months after section,[43] axis cylinders possessing a well-marked medullary sheath are not present until 58 days after union. These experiments seem to show conclusively that the axis cylinder is developed *in situ* and not as a down-growth from the central end, but that union with the central nervous system is necessary for its formation, such union not taking place necessarily by means of its own central end. That this central communication may be of a slight nature is proved by the experiments of Manasse,[44] who obtained

[31] Bulletins et Mémoires de la Société de Chirurgie, 1905, No. 17 p. 471.
[32] THE LANCET, July 28th, 1902, p. 198.
[33] Journal of Physiology, vol. xiv., p. 50.
[34] Philadelphia Medical News, vol. lxv., 1894, p. 203.
[35] The Healing of Nerves.
[36] Transactions of the Royal Medical and Chirurgical Society, 1902.
[37] Injuries and Diseases of Nerves.
[38] Journal of Physiology, vol. xxxi., p. 418.
[39] Allgemeine Anatomie und Physiologie des Nervensystems, 1903.
[40] Journal of Physiology, vol. xxxii.
[41] Ibid., vol. xxxi., p. 7.
[42] Ballance and Purves Stewart: The Healing of Nerves, p. 98.
[43] Head and Ham: Journal of Physiology, vol. xxxii.
[44] Archiv für Klinische Chirurgie, Band lxii., 1900, S. 905.

regeneration of the peripheral end of the facial nerve in three out of five dogs after suturing it to the side of the spinal accessory nerve without intentional division of any of its fibres. In human beings recovery has ensued after similar treatment. The series of cases reported by Ballance and Purves Stewart[45] in which the facial nerve was fixed to the spinal accessory by the following method is conclusive: "Its (the spinal accessory) sheath incised ..... and into it the distal end of the facial nerve was fixed by sutures."

The observations which I have brought forward confirm the results of experiment. After secondary suture the commencement of the first stage of recovery may be seen at an earlier date than after primary suture, a date which compares well with the time Head and Ham found necessary to the restoration of conduction in their experiments. The longer time necessary for the development of axis cylinders after secondary suture corresponds to the longer time necessary to the full recovery of sensibility after this form of suture.

We know from clinical experience that nerve injuries in the young have a much better prognosis than in the aged; the presence of medullated nerve fibres in the peripheral end of a nerve separated from its own central end in young animals points to the ease with which connexion with the central nervous system becomes re-established in them. That peripheral regeneration must occur to some extent is also shown by the examples of the recovery of sensibility to prick after primary suture. The first sign of returning sensibility is noticed at about the same time, no matter at what level the nerve is divided. But the clinical evidence is not so clear with regard to the fibres which subserve sensibility to light touch and those which supply the muscles. I have shown that the first signs of recovery of sensibility to light touch and of voluntary power are noticed at a later date the farther from the periphery the nerve is divided. But as the same occurs during the recovery of a nerve from the effects of pressure when no regeneration is necessary, the explanation given by Henriksen[46] seems to be the correct one. "The injured nerve is a bad conductor; the longer the piece of nerve which is hurt, the greater the resistance ..... and thus a higher degree of regeneration must be supposed before it can be expected that an impulse will cause movement ..... it cannot be taken as evidence that the nerve is growing from the centre."

In conclusion, I hold that the clinical evidence, so far as it is positive, is in favour of the formation of the new nerve fibres *in situ*, and that even when it is negative it discloses nothing against this theory. But union with the central nervous system is necessary before the development of axis cylinders takes place. Taken with the experimental, the evidence goes to show that regeneration is "peripheral" but not "autogenetic."

INCOMPLETE DIVISION.

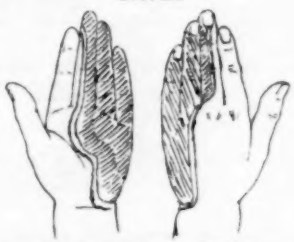
A study of the distribution of the motor and sensory effects which follow incomplete division of a nerve and the manner in which recovery ensues is of great importance. From the nature of these injuries it has been impossible to verify by operation the diagnosis of every case that I shall quote, but this has been done in several instances. At the present time the classification generally used for these injuries is unsatisfactory. Contusions, ruptures, and wounds are spoken of without due regard to the symptoms produced by them. In some instances all the signs of complete division are present, yet on exploration it is found that there is no loss of the anatomical continuity of the nerve. These signs may persist and recovery be delayed until the damaged portion of the nerve has been resected. For this reason I suggested[47] the classification of cases of complete division into the anatomical, in which the anatomical continuity of the nerve is completely interrupted, as by rupture or section; and the physiological, in which with the nerve in naked-eye continuity all the signs of complete division are present. Cases of incomplete division may be classified in a similar way. I include under the term "incomplete division" all those cases in which, as the result of an injury, conduction through the nerve is interrupted without the production of degeneration in the whole of the peripheral end of the nerve. The symptoms produced by anatomical or by physiological incomplete division may be identical.

[45] Brit. Med. Jour., May 2nd, 1903.
[46] THE LANCET, April 18th, 1903, p. 1089.
[47] Clinical Journal, Nov. 13th, 1903.

It is the recognised teaching that the effects of contusions and incomplete divisions of nerves fall chiefly upon the muscles. Bowlby[48] writes: "In examining patients who have suffered from nerve contusion it is by no means uncommon to find that sensation and motion are not lost to an equal extent, that in some cases of complete paralysis of motion there is by no means a corresponding loss of sensation, and much more rarely that sensation is lost while motion is retained." Again,[49] "A severe contusion of a nerve may be followed by all the symptoms of complete section. Slighter injuries cause a greater loss of motion than of sensation and muscles may be quite paralysed whilst the sense of touch is but little impaired." These statements require, I believe, considerable modification. Of all the nerves liable to this variety of injury the musculo-spiral suffers most often. Bruns[50] and Reithus[51] have pointed out that the nerve is most often injured in fractures of the shaft of the humerus, including under the term "shaft" that portion of the bone between the insertion of the pectoralis major and the origin of the supinator longus, after this in the lower third. So that the musculo-spiral is most often injured below the point at which its external cutaneous branches are given off. In speaking of complete division of this nerve I showed that it may be severed in this position without causing any sensory loss. Incomplete division is also common in the upper roots of the brachial plexus. I have already shown that complete section of the anterior primary division of the fifth cervical nerve may cause no sensory change and that cases have been reported in which the fifth and sixth were divided without producing loss of sensation. In the two positions in which incomplete divisions are common we see that complete section produces no sensory change. Excluding these situations a study of the results of incomplete division of mixed nerves will show that sensation is affected to the same extent as, and often to a more enduring degree than, motion. Weir Mitchell,[52] from his extensive experience, wrote: "When a nerve of mixed function is slightly injured by contusion the first impression is most felt by the sensory branches."

In incomplete wounds of nerves with a sharp cutting instrument it has been found, both clinically and experimentally, that a considerable portion of the trunk of the nerve may be divided without producing any change or one of a transient nature only. In one instance in which I implanted the external popliteal nerve into the internal after cutting through the third of the latter nerve, no affection of sensation was present on the foot two days later. But this occurs only in the trunk of the nerve and not near the point at which its branches are given off; here the fibres are grouped together and the effect of complete division of that branch may be produced. If it supplies any part exclusively with sensibility to light touch or prick, then those forms of sensibility will be absent until restored by regeneration. The following instance of complete division of the ulnar nerve, together with an incised wound of the median, is a good example of this type of injury.

FIG. 22.



Showing the loss of sensation resulting from complete division of the ulnar with incomplete division of the median nerve.

A boy, aged 14 years, put his hand through a glass window on Nov. 13th, 1904. I examined him four hours later and found that all forms of cutaneous sensibility were lost over the area shown in Fig. 22. All the intrinsic muscles of the

[48] Injuries and Diseases of Nerves, p. 225.
[49] Treves's System of Surgery, vol. i., p. 687.
[50] Deutsche Chirurgie, Band xxvii.
[51] Beiträge zur Klinischen Chirurgie, Band xxiv., S. 703.
[52] Injuries of Nerves, p. 137.

TABLE II.—INCOMPLETE DIVISION OF NERVES.

No.	Nerve.	How injured.	Result.		Recovery.	
			Sensation.	Muscles.	Sensation.	Muscles.
1	Median.	Glass cut at wrist (explored).	Loss of light touch and prick over the usual area.	No paralysis but irritability to interrupted current lost.	Both forms commenced to clear in four weeks. In 40 weeks only the last phalanx of index and middle fingers insensitive to light touch.	Reacted to interrupted current in 18 weeks.
2	,,	Glass cut at wrist (explored).	Usual loss of light touch and prick.	Muscles paralysed. Did not react to interrupted current; reacted in typical manner to constant current.	Both forms commenced to clear in six weeks. Hand everywhere sensitive in 18 weeks. Compass test not quite perfect in 52 weeks.	Acted voluntarily in six weeks; reacted to interrupted current in 12 weeks.
3	,,	Glass cut at wrist (explored).	Usual loss of light touch and prick.	Muscles paralysed. Did not react to interrupted current.	Both forms commenced to clear in ten weeks. Almost completely returned in 19 weeks.	Acted voluntarily in nine weeks; reacted to interrupted current at 11 weeks.
4	Ulnar.	Bony pressure at elbow, result of old fracture.	Loss of light touch over the usual ulnar area.	No change.	—	—
5	,,	Kick over the internal condyle.	Both forms lost over ulnar area on palm and fingers and over the dorsal surface of the terminal two phalanges of the little finger.	No paralysis; paresis of the third palmar interosseous.	Both forms commenced to clear on the third day. Sensation perfect on the fourteenth day.	Appearance of the hand was normal on the fourteenth day.
6	,,	Struck the inner side of the elbow on a stone step.	Loss of light touch over the usual ulnar area.	No paralysis.	Perfectly restored in 24 weeks.	—
7	,,	Pressure at the elbow from strapping.	Loss of light touch over the usual ulnar area.	,,	Perfectly restored in 35 weeks.	—
8	,,	Separated lower epiphysis of the humerus. Six weeks later anæsthetic was given "to break down adhesions." Anæsthesa noticed after this.	Loss of light touch over the usual ulnar area.	,,	Light touch everywhere appreciated in eight weeks. Compass test not quite perfect in 36 weeks.	—
9	,,	Bound down to callus in the lower third of forearm.	Loss of light touch and prick over the usual ulnar area.	Paralysed: loss of faradic irritability. Reactions to constant current typical.	Nerve freed eight weeks later. 14 days later both forms commenced to clear. In six weeks lost over little finger only.	No change in six weeks.
10	,,	Cut into on ulnar side in the lower third of the forearm (explored).	Loss of light touch over the dorsal area.	Paralysed. Irritability to interrupted current lost; reaction typical to constant current.	Sensibility perfectly restored in eight weeks.	In three weeks first dorsal interosseous and abductor minimi digiti reacted to interrupted current. After being present two months it was again lost and the muscles did not react again until 28 weeks after the injury. The first dorsal interosseous and adductors of the thumb acted voluntarily in 12 weeks; all acted in 28 weeks.
11	Ulnar (below dorsal branch).	Pressure of ganglion (explored).	Loss of light touch over the ulnar area.	Paralysed. No reaction to interrupted current; typical to constant current.	Perfect 14 weeks after removing the ganglion.	Acted voluntarily and reacted to interrupted current 14 weeks later.
12	Ulnar (below dorsal branch).	Glass cut (explored).	Loss of light touch and prick over the ulnar area.	All paralysed except first dorsal interosseous; all lost reaction to interrupted current.	Both forms of sensibility clearing together in eight weeks; 104 weeks after injury the compass test not quite perfect.	All acted voluntarily in eight weeks and first dorsal interosseous reacted to the interrupted current. None of the other affected muscles reacted until eight weeks later.
13	Median and ulnar (at wrist).	Splint pressure.	Loss of both forms of sensibility over the usual area.	All intrinsic muscles of the hand were paralysed and did not react to interrupted current.	Both forms almost completely returned in 14 weeks, perfect in 28 weeks (not seen in the interval).	All acted voluntarily and reacted to interrupted current at 28 weeks.
14	Median and ulnar (forearm).	Lacerated forearm, compound fracture of the humerus, and ruptured brachial artery (explored).	Loss of light touch over the usual area; of prick only over the last two phalanges of the fingers.	Paralysed. No reaction to interrupted current.	Both forms of sensibility clearing in 18 weeks; perfect in 48 weeks.	All acted voluntarily in 30 weeks. Reacted to interrupted current in 48 weeks.
15	Brachial plexus.	Dislocated humerus.	Light touch lost over the ulnar area.	Paralysis of the muscles supplied by musculo spiral and ulnar nerves and of the deltoid muscle. Loss of reaction to interrupted current; typical reaction to constant current.	Light touch everywhere appreciated in 24 weeks. Compass test perfect in 64 weeks.	Deltoid and triceps acting voluntarily and reacting in 12 weeks. Extensors of wrist 14 weeks. In 28 weeks all the muscles were acting and reacting.

TABLE II —INCOMPLETE DIVISION OF NERVES—(*Continued*).

No.	Nerve.	How injured.	Result.		Recovery.	
			Sensation.	Muscles.	Sensation.	Muscles.
16	Inner cord of the brachial plexus.	Dislocated humerus (sub-coracoid).	Light touch lost over the post-axial half of the fore-arm and ulnar area of the hand.	Paralysis of all the muscles supplied by the ulnar nerve and abductor and oppo-nens pollicis. No re-action to interrupted current; typical to constant current.	No change in four weeks.	—
17	Inner cord of the brachial plexus.	Dislocated hu-merus (sub-coracoid).	Light touch and prick lost over the post-axial half of the forearm and ulnar area of hand.	Flexor carpi ulnaris and all intrinsic mus-cles of the hand were paralysed. No re-action to interrupted current; typical to constant current.	Both forms clearing to-gether in 12 weeks. Not seen again but patient wrote six months later saying he was well.	No change in 12 weeks.
18	Musculo-spiral.	Fractured lower end of the humerus. (No operation.)	—	Paralysed. Loss of re-action to interrupted current; typical to constant current.	—	At 11 weeks supinator longus acted; at 14 weeks extensors of the wrist and fingers; at 22 weeks extensors of the thumb; and at 52 weeks all reacted to interrupted current.
19	,,	Arm crushed be-tween rollers; no fracture. Nerve in-jured in the lower third. Explored; freed from fibrous tissue four weeks after injury.	—	As above.	—	14 weeks after operation ex-tensors of the wrist acted; 16 weeks after the fingers acted; 20 weeks after the thumb acted; and 28 weeks after all reacted to inter-rupted current.
20	,,	Fractured middle of shaft of the humerus. 13 weeks after injury the sharp end of the bone, which was pressing on the nerve, was re-moved.	—	As above.	—	Three weeks after operation the supinator longus and ex-tensors of the wrist acted. Eight weeks after all the muscles acted. At this date none reacted to interrupted current.
21	,,	Com-ound fracture of the lower end of the humerus. (No operation.)	—	Muscles paralysed.	—	All the muscles acted in 16 weeks. No return of irrita-bility to interrupted current in 28 weeks.
22	,,	Fractured lower third of the humerus. Freed from callus five weeks later.	—	As above.	—	Four weeks after operation supinator longus and exten-sors of the wrist acted. After 16 weeks all acted except the extensors of the thumb and all reacted to interrupted current. The muscles were perfect in 24 weeks.
23	External popliteal.	Pressure of Clover's crutch.	Loss of light touch over the usual area.	Paralysed but reacted to interrupted current.	Began to clear in six weeks; perfect in 14 weeks.	Acted in 14 weeks; perfect in 28 weeks.
24	External popliteal.	Crush.	Loss of light touch and prick as seen after division below the lateral cutaneous branch.	Paralysed. No reac-tion to interrupted current; typical to constant current.	Both forms cleared together and were every-where appreciated in 14 weeks. Area of changed sensibility per-sisted at 44 weeks.	At 36 weeks tibialis anticus acted well and the peroneI feebly; at 44 weeks all the muscles acted. At this date there was no return of irrita-bility to interrupted current.
25	External popliteal.	Fracture of the neck of the fibula from direct vio-lence. 11 months later the nerve was exposed and found adherent to the upper frag-ment. Freed.	As above.	Paralysed. No reac-tion to interrupted current; to constant at first typical; later the reaction of de-generation developed.	Right weeks after opera-tion began to clear; in 52 weeks everywhere present, but 126 weeks after operation still diminished.	16 weeks after operation tibialis anticus acted and 28 weeks after extensor longus digitorum reacted. After being present a few months again lost and 126 weeks after operation none acted.

hand were paralysed. I explored the wound at the wrist five hours after its infliction and found that, in addition to tendons, the whole ulnar nerve was divided and the median cut into on its ulnar side. Sensibility to prick began to return about ten weeks later; when I saw him last, five months after the injury, the fingers only were insensitive to this form of stimulation. But the loss of light touch on the palm and dorsum remained as definite as on the day of division. From the sensory standpoint he behaved as a case of complete division of the ulnar nerve and of the inner of the two branches into which the median nerve divides in the palm of the hand.

These cases bear out the statement made by Bruandet and Humbert[53] as the result of their experiments and researches. They found that the nerve fibres which go to make up any branch do not become grouped together until just before it leaves the parent trunk. This is of importance from the point of view of nerve anastomosis, for there seems to be little doubt that the best results are obtained in cases in which a portion at least of the sound nerve is divided. This has been proved experimentally by Kilvington.[54] But, in the accidental wounds of the trunks of nerves with which we have to deal, rarely is the section so clean; in addition to the anatomical division there is always interruption of conduction the result of contusion (incomplete physiological division). For this reason I am grouping them together. But it must be borne in mind that divided fibres must degenerate and regenerate and it is to the recovery of the bruised or compressed fibres that the restoration of function so different to that seen after complete division is due.

The first effect of incomplete division of a mixed nerve is alteration in the appreciation of light touch with failure to respond to the compass test. In those cases which come under the care of the surgeon this loss is usually absolute

[53] Archives Générales de Médecine, 1905, No. 11.

[54] Brit. Med. Jour., April 29th and Sept. 15th, 1905.

with borders as well defined as after complete section. With a more severe injury insensibility to prick results, but I have not yet seen deep sensibility lost as the result of incomplete division. The following is a good example.

A boy, aged 13 years, was strapped by Sayre's method for a fractured clavicle. When the limb was taken down he complained of numbness. On examination I found loss of sensibility to light touch over the ulnar area with no affection of the muscles. Yet it was five months before complete recovery ensued with perfect discrimination of two points.

Out of the 19 cases of incomplete division of nerves, excluding the musculo-spiral nerve (see Table II.), sensibility was affected in all. In six there was no paralysis and in one it did not involve all the muscles supplied by the nerve below the seat of the lesion.

Incomplete division may be followed by weakness of muscles or by absolute paralysis. It is important to remember that when this latter occurs as the result of a subcutaneous injury it may be necessary to wait a week or ten days before the diagnosis of complete or incomplete division can be made. This can only be done by a careful study of the electrical reactions of the affected muscles. But if it occurs as the result of a wound no time should be lost before exploring the condition of the nerve.

In the least severe cases the muscles, though paralysed, react to the interrupted current but may react in a different manner to the constant current. If the muscles react to the interrupted current, changes in their excitability to the constant current are, at the present time, of no diagnostic value. In the case as it usually presents itself to the surgeon the lesion is more severe than this and I consider the reactions to be typical of incomplete division. The muscles do not react to the interrupted current but react in a striking manner to the constant. There is increased irritability, the muscles react to a smaller current than those of the sound side, and the contraction, instead of being the long-drawn-out, wave-like contraction seen when the reaction of degeneration is present, is brisk, though not the sharp twitch given by sound muscles.

In speaking of the changes which occurred in the electrical excitability of the muscles after complete division of their nerve I pointed out that the phase of heightened excitability to the constant current described by most authorities had not been present in any of the cases I had watched. I wish to lay great stress upon this as I believe the reactions I have just described are present only in cases of incomplete division, or in the recovering stage after complete division, and so form an important advance in our powers of diagnosis. The following case in which the condition of the nerves was explored, one being completely divided and the other incompletely, seems to me to be conclusive evidence of this.

In an instance of complete division of the ulnar nerve, with incomplete division of the median, three weeks after the injury paralysis of all the intrinsic muscles of the hand was still present and none of them reacted to the interrupted current. The abductor-opponens group of muscles reacted briskly to a constant current registering two milliampères, while those supplied by the ulnar nerve, which had been completely divided, reacted with a typical slow contraction to five milliampères, with polar reversal.

Lewis Jones,[55] in his work on "Medical Electricity," distinguishes a partial reaction of degeneration, but applies the term to cases in which "some degree of contractility for coil currents is present, although there is decided sluggishness of contraction of the muscle for the battery current." This corresponds to the slightest degree of injury which I have mentioned. He does not distinguish the reactions that I have spoken of as typical of incomplete division and apparently includes them under the term reaction of degeneration. But he has described a case of this description in which there was "R.D. of all the extensors but wasting was not extreme, the contractions were of very good volume, and the sluggishness was not conspicuous." The later history of the case showed that the nerve had been incompletely divided. Later, he says, "Thus the diagnosis between severance of a nerve and serious injury without severance cannot be made with certainty by electrical testing."

Out of the 19 cases of which I have notes in which paralysis was present, in one only was the irritability to the interrupted current retained; the others showed the reaction that I have described. In one instance in which the nerve was injured in continuity definite reaction of degeneration was present; in this case no recovery of muscles ensued. Thus I think that it is possible to make the diagnosis of incomplete division by this means. But it is, of course, impossible to diagnose between complete anatomical and complete physiological division in this manner.

[55] Loc cit., pp. 272, et seq.

RECOVERY AFTER INCOMPLETE DIVISION.

We must now pass on to the method of recovery after incomplete division. This throws considerable light upon the constitution and regeneration of the peripheral nerves. When a nerve has been completely divided, sensibility to prick becomes everywhere restored before the commencement of the recovery of sensibility to light touch; there is thus an interval in which the whole affected part is sensitive to prick but insensitive to light touch. I also pointed out that complete sensory recovery, the disappearance of the area of changed sensibility and the perfect appreciation of the compass test, took often several years. I showed that the time of the restoration of voluntary movement varied with the distance from the periphery at which the nerve was divided and that the muscles nearest the seat of the injury regained voluntary power and electrical excitability before those nearer the periphery. After incomplete division both forms of sensibility return together and unless nerve fibres have been severed to any great extent the restoration of the power of discriminating two points (the compass test) quickly follows. The further from the periphery the nerve is injured the longer the time necessary to complete sensory recovery. The knowledge of this method of recovery forms an important addition to our powers of diagnosis. If both forms of sensibility are clearing together we can be certain that the interruption of continuity has not been severe enough to produce degeneration. The following cases illustrate some of these points.

A man, aged 27 years, cut his left wrist with a fragment of a broken bottle on Sept. 20th, 1902. When I saw him two and a half hours later a small incised wound was present over the position of the median nerve at the wrist. The abductor and opponens muscles acted perfectly but sensation was lost over the area shown in Fig. 23, A. It will be noticed that the loss of sensibility to prick was less than is usual after complete division of a median nerve with such a large exclusive supply—that is, the loss of sensibility to prick did not involve the radial border of the index finger, although an extensive area on the palm was affected. The loss of sensibility to light touch was as widespread and well defined as after complete division. I explored the wound at once and found that the median nerve for half an inch was of a dark red colour and swollen; it had been cut into on its ulnar side. No change took place in the condition of sensibility during the first six days, but the muscles lost their faradic irritability, although contracting voluntarily. To the constant current they showed the reactions I have described. 14 days after operation both forms of sensibility had begun to diminish in extent (*vide* Fig. 23, B). It will be seen that both forms of sensibility were recovering together from above downwards. Over the previously insensitive portion of the hand the compass test was almost perfect at one centimetre and was completely restored in this position 14 days later. Three months after the injury the muscles again reacted to faradism. In six months the condition of sensation was as shown in Fig. 23, C; in nine months it was everywhere perfect except over the terminal phalanx of the index and middle fingers. After this date the patient passed out of my observation.

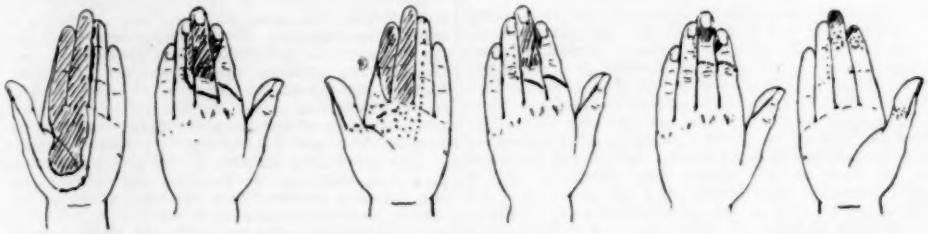
A similar method of recovery is shown in Figs. 24, A, and 24, B. The patient from whom these figures were taken fractured his radius and ulna in the lower third of the forearm eight weeks before I saw him. On examination on Jan. 1st, 1906, sensibility was lost over the areas shown in Fig. 24, A; all the muscles supplied by the ulnar nerve in the hand were paralysed and did not react to the interrupted current but reacted in the typical manner to the constant current. On Jan. 3rd I explored the condition of the nerve. I found it bound down to the ulna through the fibres of the flexor profundus digitorum; on freeing it, its posterior surface was rough and a scar was present here; the end of the ulna had probably wounded it. After freeing I surrounded it with Cargile membrane to prevent it from again becoming adherent. Ten days later both forms of sensibility began to return together, and six weeks after

operation the condition of sensibility was as shown in Fig. 23, B.

A less severe form of injury occurred in the following case. The patient was kicked over the internal condyle of the humerus. Two days later sensibility to cotton-wool was lost over an area on the hand corresponding to the distribution of the palmar division of the ulnar nerve. Sensibility to prick was lost over an area almost as extensive. He could perform all the movements of his hand, but the little finger was weak and tended to assume the ulnar position; all the muscles reacted to the interrupted current. Both forms of sensibility cleared together and at the end of three weeks sensibility was normal. In this instance the whole of the distribution of the injured nerve was not affected and restoration of sensibility was consequently more rapid.

But the course may not be so favourable as I have mapped out, especially in cases of incomplete anatomical division in which immediate treatment was not carried out. From two to three weeks after the injury hyperalgesia may develop in the full distribution of the nerve, particularly in cases of gun-shot wounds.

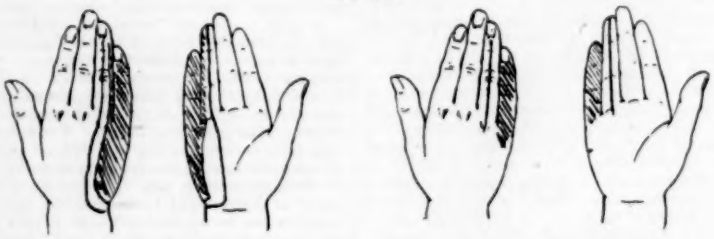
FIG. 23.



A B C

To illustrate the method of sensory recovery after incomplete division of the median nerve. A, Effect of incomplete division. B and C, Showing both forms of sensibility recovering together.

FIG. 24.



A B

A and B, To illustrate the method of recovery after incomplete division of the ulnar nerve, both forms of sensibility recovering together.

In a patient[56] who was wounded during the late war in South Africa the ulnar nerve was injured. Three weeks later the hand became painful; the pain increased in severity until when we saw him six months later it had become extremely severe. The hand was hyperalgesic over an area corresponding to the full distribution of the ulnar nerve. Sensibility to light touch was lost over the area supplied by the whole ulnar nerve, but he could everywhere appreciate ice and water at 50° C. Operation revealed incomplete division of the nerve; section caused the pain to disappear and the usual area of insensibility resulted.

In another instance[57] the external cutaneous nerve was incompletely divided as the result of a cut glass wound. Two weeks after the injury the patient complained of pain, which gradually increased in severity. When he came under my care 14 weeks after the accident a transverse scar was present two and a half inches above the fold of the wrist on its anterior surface. Extending downwards from this was an area of extreme tenderness corresponding to the full distribution of the anterior branch of the external cutaneous nerve. Sensibility to light touch, to the compass points, and to the point of a pin was normal. On exploration I found that the nerve was adherent to the scar, was smooth on its posterior surface, but on its anterior presented a scar. It had evidently been incompletely divided.

The recovery of the muscles after incomplete division of their nerves follows the same march as after complete—that is, the muscles nearest the seat of the lesion first regain voluntary power. In all the cases that I have so far observed voluntary power returned before irritability to the interrupted current and, as in the case I quoted, voluntary power may be present from the first but irritability to the interrupted current may be lost. In the 13 cases in which my notes on the subject are complete in all voluntary power returned before electrical excitability, often some weeks or even months before.

In cases uncomplicated by sepsis or extensive wounds of the surrounding tissues binding the nerves in a mass of fibrous tissue the first return of voluntary power was noticed in from four to ten weeks in the upper limb and progressed to perfect recovery in all the cases watched for a sufficient time. In one instance in which the external popliteal nerve was affected voluntary power did not return for nine months but it was perfectly restored in 11; irritability to the faradic current was not present at this date. In one instance in which the external popliteal was injured the muscles, though paralysed, reacted to the interrupted current; voluntary power began to return in three and a half months and was perfect in five and a half. In another instance the muscles developed the reaction of degeneration; no recovery was present two and a half years later. Sensibility began to be restored in from four days (in the instance in which the whole area supplied by the nerve was not affected) to four and a half months, but the usual time was about six weeks. It was completely restored in from 27 days to 12 months. In one instance of injury to the inner cord of the brachial plexus sensory recovery commenced in three months, in another instance in six, and was perfect to all forms of sensibility in 15 months. In one case in which the external popliteal was affected light touch and prick could be appreciated in three and a half months, but an area of changed sensibility to the point of a pin remained seven months later. Sensibility is restored much more quickly in those cases in which light touch only is lost.

PROGNOSIS IN CASES OF INCOMPLETE DIVISION.

This is on the whole good. Motor power and irritability to the interrupted current returned in all the cases watched

[56] Head and Sherren, Case 63.
[57] Ibid., Case 45.

for a sufficient period, and sensibility was restored at a comparatively early date except in one patient in whom the compass test was not quite perfect in a year. But it must not be forgotten that in certain cases, particularly in those of wounds of nerves in which treatment was neglected at the time of the accident, tenderness may develop in the distribution of the affected nerve, necessitating a complete resection of the damaged portion; in other cases, after a period of improvement, deterioration of function occurs as the result of the involvement of the nerve in fibrous tissue.

In instances of freeing the musculo-spiral nerve from the pressure of callus or displaced bone recovery rapidly ensued; this is in accordance with the extensive evidence that has been collected.

To sum up the effects of incomplete division of a nerve, sensation and motion are equally involved; the former may be affected without the latter and its effects often last for a longer period. The anomalies of sensory loss are found in the same nerves as those in which they occur after complete division.

Recovery of sensation follows different lines from that observed after complete division; if both forms of sensibility are lost both clear together.

THEORETICAL CONSIDERATIONS.

There are certain facts which I have mentioned in speaking of the distribution and recovery of the peripheral nerves which cannot be explained by any of the theories of sensation hitherto advanced. After complete division of a peripheral nerve, sensibility to light touch is lost over a well-defined area which varies from patient to patient within slight limits only. Sensibility to prick is lost over an area that varies widely from patient to patient, being in some almost as extensive as the loss of sensibility to light touch, in others falling far short of it. Lastly, deep sensibility may be everywhere retained after division of a peripheral nerve and all stimuli which deform the skin may be well localised. But these three varieties of sensibility vary independently of one another. The area of loss of light touch is almost invariable and is independent of that of sensibility to prick and deep touch. During recovery after complete division sensibility to prick everywhere returns, leaving a well-defined area sensitive to prick but insensitive to light touch. But if the continuity of the nerve be interrupted without leading to degeneration both forms of sensibility return together. In certain situations, after division of posterior roots in the cervical region and after division of the radial and external cutaneous nerves, an area remains sensitive to light touch and the stimuli which accompany it but quite insensitive to prick and ice and water at 50° C. It is impossible to explain these facts on the usual grounds of graded sensibility. For instance, if the loss of sensibility to prick were but a deeper degree of the loss of sensibility to light touch it would be difficult to explain the variations that I have drawn attention to, the method of recovery after complete and incomplete division, and the curious dissociation of sensibility that I have mentioned. For these reasons Dr. Head and myself[58] brought forward the theory that the afferent fibres in the peripheral nerves can be divided into three systems. 1. Those which subserve deep sensibility. 2. A system of fibres and end organs responding to painful cutaneous stimuli and to the extremes of heat and cold. 3. A system of nerve fibres and end organs responding to light touch, with a well localised sensation and enabling us to appreciate the minor degrees of temperature and to discriminate two points. We believe that the fibres which endow a limb with deep sensibility run to a great extent with the motor nerves to the muscles and then pass along the fibrous structures connected with them. Hence after division of the median nerve at the wrist the patient may be able to appreciate and localise any stimulus appealing to this form of sensibility. These nerves of deep sensibility have wide anastomoses; hence, while it is the rule that division of tendons in addition to the nerve at the wrist produces a loss of deep sensibility, yet there are wide variations to be met with, and further investigations are necessary before all the points in connexion with this variety of sensibility are known.

To the second system we gave the name "protopathic." It is the form of sensibility which exists in the intermediate zone between the boundary of loss of all forms of cutaneous sensibility and that of the loss of sensibility to light touch and the minor degrees of heat and cold. In an area endowed only with this form of sensibility the sharpness of a pin prick is recognised and the patient can discriminate between water at 50° C. and ice. All sensations evoked by the stimuli to which it is capable of reacting are badly localised, radiate widely, and are accompanied by tingling. The character of the sensation evoked by a pin is more disagreeable than over parts of normal sensibility; on reaching the area endowed only with protopathic sensibility the patient often makes an exclamation and withdraws his hand. Patients have described the sensation as "a numb, tingling pain" or "as if you were touching a sore place." This system of fibres regenerates more quickly than the third and often returns under conditions that materially hinder the full development of sensibility to light touch.

To the third system we gave the name of "epicritic" sensibility. Light touches and the minor degrees of heat and cold are recognised and localised by these fibres and end organs. This system of fibres regenerates much more slowly than the protopathic fibres. The last two forms of sensibility are differently represented in each peripheral nerve, but in all cases the fibres subserving protopathic sensibility have a much greater overlap than those which subserve epicritic; the overlap of the latter is so small as to be negligible.

This comprehension of sensibility which we have put forward differs fundamentally from any previously held and explains satisfactorily all the phenomena which have given rise to so much discussion after division of peripheral nerves. The problem dates from the year 1867 when Richet[59] pointed out the retention of sensibility after division of the median nerve. He considered that this was due to the presence of the recurrent fibres described by Claud Bernard. The next year Savory[60] explained the phenomenon as it occurred after division of the musculo-spiral nerve by that of anastomoses. In the same year Létiévant, in a communication to the Société de Chirurgie, enunciated his wider theory, that of supplementary sensibility, including in the term not only recurrent sensibility and anastomoses or, as he puts it, coarse and fine anastomoses, but also sensibility taken up from an anæsthetic region by the neighbouring end organs, called by him mediate sensibility and corresponding to what we described as deep sensibility. His researches received apparent confirmation from the researches of Arloing and Tripier[61] published the following year.

In 1873 Létiévant[62] published his great work, in which he gave an extended account of his doctrine as applied to the various nerves. Richelot,[63] and more recently Laborde,[64] confirmed his observations, while most modern writers on the subject have taken supplementary sensibility as the explanation of the varieties of sensibility met with after division of a peripheral nerve. But however widely applied this fails to explain the well-defined and little varying area of epicritic loss, the varying protopathic loss, the presence of deep sensibility, and the curious dissociation of sensibility in which light touch and the minor degrees of temperature can be appreciated over a part insensitive to prick and ice and water at 50° C., and also leaves unexplained the method of sensory recovery. These can be most satisfactorily explained on the theory which we brought forward.

[58] Ibid., p. 167.

[59] L'Union Médicale, Nov. 14th, 1867.
[60] THE LANCET, August 1st, 1868, p. 142.
[61] Archives de Physiologie Normale et Pathologique, 1869.
[62] Traité des Sections Nerveuses.
[63] Archives de Physiologie, 1875.
[64] Bulletin de l'Académie de Médecine, 1893, p. 476.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC.—The annual general meeting of the Medical Graduates' College and Polyclinic was held on March 23rd at 22, Chenies-street, Gower-street, London. Dr. C. Theodore Williams, the chairman of the council, was in the chair, and discussed in the course of his speech moving the adoption of the annual report and balance-sheet the financial position of the institution. The important point was that the college was paying its way but what was wanted was to get rid of the debt. £6600 were owed on mortgage and the interest on that was £219. The college would be in a very different position if enough money could be raised to pay off that mortgage. Taking the balance-sheet as a whole, he congratulated the meeting on a very successful year and he urged members to induce medical men to join the institution. The college offered them a sort of home and a comfortable club with many other advantages. The meeting terminated with the transaction of some formal business.

PERFORATED ULCER OF THE DUODENUM.

WITH REPORT OF 14 CASES.[1]

BY S. MAYNARD SMITH, M.B., B.S.LOND., F.R.C.S ENG.,
SURGICAL REGISTRAR TO ST. MARY'S HOSPITAL.

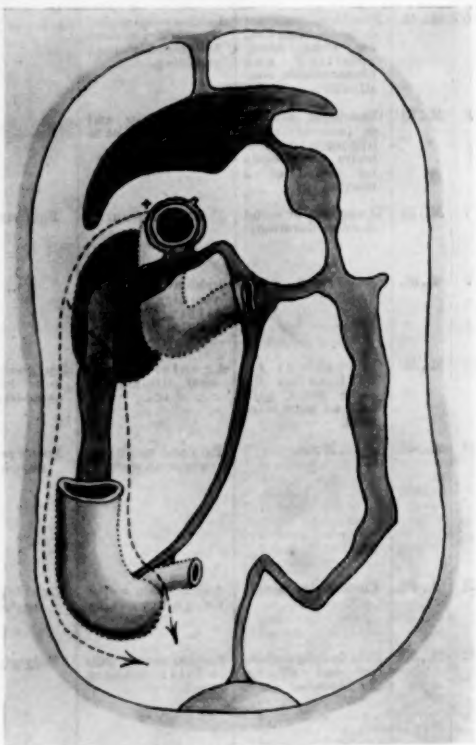
IT is only within the last few years that perforation of a duodenal ulcer has become generally recognised as a condition to be kept in mind when dealing with a case of urgent abdominal lesion. One may, in fact, say that it has been the latest condition to be rescued from that conglomerate category of the past—acute peritonitis.

There has been an increasing number of individual cases published since 1901, when Moynihan[2] collected 51 cases of acute perforated duodenal ulcer submitted to operation. There have, however, been but few instances in which a consecutive series has been placed on record. It is from such a series only that it is possible to form a true idea of the mortality and of the influence of the mode of treatment adopted on that mortality. It is this that I think warrants me in recording a series of 14 cases of acute perforated ulcer of the duodenum which have been admitted to St. Mary's Hospital since 1900 and the majority of which I have had the opportunity of observing. Of these 14 cases, 12 were males and two females. The average age was 40 years. Three were not operated upon. One was so collapsed that an operation was considered out of the question. The patient died within 13 hours of the perforation. One was brought into hospital in a moribund condition five days after perforation and died whilst preparations were being made for operation. In one case the condition was found post mortem. Eleven were operated upon with five recoveries and six deaths. Of those that died one became so collapsed under the anæsthetic that the closing of the ulcer had to be abandoned and the patient died within a few minutes of leaving the theatre. In another case the perforation was not found at the operation. Details of these cases will be found in the annexed table and I propose to deal here with certain points in connexion with them which suggest themselves as being of most importance or most open to discussion.

Perforated duodenal ulcers may be best divided, I think, into three classes: 1. Acute perforation of the peritoneal-covered surface of the duodenum with profuse escape of intestinal contents rapidly flooding the whole peritoneal cavity. Cases of this class result in general septic peritonitis. 2. Acute perforation of the peritoneal-covered surface of the duodenum with moderate escape of intestinal contents filling up a part only of the peritoneal cavity—a part of large extent but with certain definite and constant boundaries. Those of this class result in one of two ways. A localised but extensive abscess may form, or secondly and more frequently the fluid, after remaining for a time within its original bounds, is increased in amount by further escape and invades the peritoneal cavity far and wide, giving rise to general septic peritonitis. 3. Chronic perforation of the non-peritoneal-covered surface of the duodenum or of a part of its peritoneal-covered surface which has become adherent to surrounding structures. Cases coming under this heading result in a localised abscess, chronic peritonitis with adhesions, or rarely a duodenal fistula. Whilst the third variety is quite different in its mode of onset, its symptoms, and its course to the others, it may at once be said that it is not possible to draw a hard-and-fast line between the first two classes. The onset is the same, the immediate symptoms are the same, but whereas in the first class the patient is almost *in extremis* from the first onset of the attack there is in the second class some recovery from the initial collapse. The duration of this abatement of symptoms may be of the shortest, or there may be a veritable latent period. In either case, however, extension of the area of extravasation and general septic peritonitis almost inevitably result if surgical treatment be not adopted. The second class of acute perforation is more common than the first; in other words, there is in the majority of cases an interval during which the extravasated contents, although no adhesions have formed, are limited to a particular region of the abdominal cavity. The evidence that may be adduced in favour of this statement may be classified under three headings: (1) experimental; (2) results of operations; and (3) situation of abscesses.

1. *Experimental evidence.*—With a view to investigate the course taken by fluid from a perforated duodenal ulcer I have carried out a series of experiments on the dead body. The pathological condition was reproduced by passing an œsophageal tube into the stomach from the mouth and attaching to it a glass tube which was passed through the pylorus and brought out of a hole in the duodenum in the usual site of perforation. The end of this tube was then tied in flush with the duodenal surface. It was possible to do this without disturbing the anatomical condition of the parts. The incision in the abdominal wall made for the purpose of these manipulations was then closed. By means of a funnel attached to the œsophageal tube fluid was run down it and made its exit into the peritoneal cavity at the site of a perforated duodenal ulcer. The fluid used was water with zinc oxide suspended in it by means of tragacanth emulsion. In every instance the fluid ran downwards in the direction of the right kidney pouch and collected in a space bounded by—*in front*, the under surface of the right lobe of the liver and the hepatic flexure of the colon; *behind*, the anterior peritoneal-covered surface of the right kidney and the posterior abdominal wall; *outside*, the curve of the abdominal wall; and *inside*, the duodenum itself and the foramen of Winslow. In an upward direction this pouch spreads behind the liver, between that viscus and the diaphragm, but here its progress is blocked by the inferior layer of the coronary ligament. Away from the middle line, however, it stretches

FIG. 1.



Showing lines of peritoneal reflection from posterior abdominal wall. The duodenum, right kidney, cæcum, and ileum are left *in situ*. The interrupted lines show the alternative routes which may be taken by fluid from a duodenal perforation. The cross indicates the site of perforation.

[1] The substance of this paper was read before the Medical Society of London on Oct. 23rd, 1905.

[2] THE LANCET, Dec. 14th, 1901, p. 1656.

TABLE OF FOURTEEN CASES OF ACUTE
(THREE WERE NOT

Case.	Sex and Age.	Symptoms preceding perforation.	Onset.	Site of pain at onset.	Site of pain on admission.	Pulse, respiration, and temperature.	Condition on admission.	Liver dulness.
1	M., 65.	Constipation; pain and vomiting not clearly associated with taking food.	Sudden intense pain whilst in bed, closely following attack of vomiting.	Close above, and to right of, umbilicus.	As at onset.	P. 50, R. 40, T. 96·5° F.	Retracted, rigid abdomen.	Slightly diminished.
2	M., 35.	None.	Sudden pain whilst at work, followed by blood-stained vomiting.	In epigastrium to right of mid-line.	All over abdomen.	P. 140, R. (?), T. 102° F.	Collapsed, abdomen distended and rigid, especially upper part of right rectus.	
3	F., 20	Vomiting 3 hours after meals for 3 months; pain in right hypochondrium.	Sudden pain and vomiting whilst at dinner.	Right hypochondrium.	As at onset and to less extent all over abdomen.	P. 126, R. (?), T. 100° F.	Not very much shock, much abdominal rigidity and tenderness.	?
4	M., 38	Constipation and pain after food; no vomiting.	Sudden pain in right hypochondrium whilst at work.	,,	All over abdomen.	P. 144, R. 40, T. 99° F.	Very collapsed, distended, rigid abdomen.	Absent.
5	M., 44.	Pain in epigastrium 2½ hours after food for some years, vomiting and hæmatemesis, constipation.	Sudden pain whilst at work, followed by blood-stained vomiting.	,,	Right side generally, especially appendix region.	P. 68, R. (?), T. 97° F.	Pale, restless, slightly collapsed; abdomen not distended, tender, or rigid.	Normal.
6	M., 32	Occasional attacks of pain in right hypochondrium 2 hours after meals for period of 3 months.	Sudden pain and vomiting whilst at work.	,,	As at onset.	P. 100, R. 28, T. 101·6° F.	Very ill; abdominal rigidity especially well marked on right side.	,,
7	M., 28	Dyspepsia of some months' duration.	Sudden pain.	Epigastrium.	All over abdomen.	P. rapid and running, R. (?), T. 97° F.	Very collapsed, much distension, abdomen rigid all over.	Absent.
8	M., 26.	None.	Sudden pain and vomiting whilst lifting heavy weight.	,,	Little pain.	P. 125, R. 35, T. 99° F.	Collapsed, moderate distension, tenderness in epigastrium.	,,
9	M., 31.	Out-patient for indigestion for some years, pain half an hour after food.	Agonising pain after drinking a cup of tea.	Epigastrium and between shoulders.	Epigastrium and right side of abdomen.	P. 106, R. 24, T. 100·2° F.	Much collapsed, some distension, great rigidity of right rectus.	Partially obliterated.
10	M., 48.	None.	Pain and vomiting whilst at work.	Lower part of abdomen.	All over abdomen.	P. rapid and wiry, R. (?), T. 97° F.	Extreme collapse, abdomen distended and rigid, fæcal vomiting. (Five days after perforation.)	?
11	F., 60.	Chronic dyspepsia.	Sudden pain whilst lifting heavy weight.	Right inguinal region.	,,	P. 124, R. 44, T. 98·5° F.	Very collapsed; abdomen somewhat distended and moved but little; rigidity.	Diminished
12	M., 68.	Pain in epigastrium on and off for 30 years.	Sudden severe pain whilst finishing work.	Epigastrium.	Left epigastric region.	P. 136, R. 40, T. 97° F.	Distension of abdomen, with tenderness and rigidity over pyloric region.	?
13	M., 28.	None.	Sudden pain whilst walking.	Right hypochondrium.	All over abdomen.	P. 140, R. (?), T. 98° F.	Severe pain and tenderness of abdomen. Rigidity and distension; persistent vomiting.	?
14	M., 37	,,	Sudden pain whilst walking.	Left side of chest.	All over abdomen, especially appendix region.	P. 100, R. 52, T. 100·2° F.	Was in condition of extreme collapse; rigidity; tenderness; loss of movement most marked over appendix. Slight distension.	Normal.

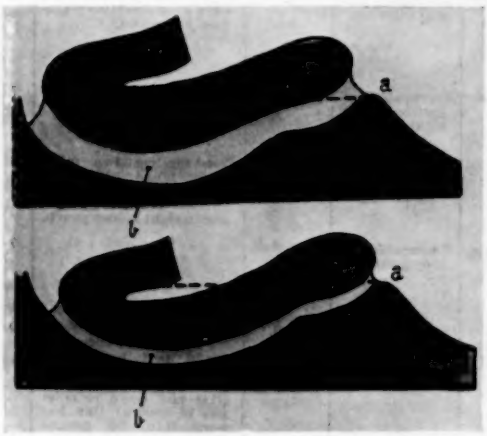
PERFORATED ULCER OF THE DUODENUM.

OPERATED UPON.)

Diagnosis made.	Interval between perforation and operation.	Diameter of perforation.	Site of perforation.	Method of dealing with perforation.	Method of cleansing peritoneal cavity.	Sites of drainage.	Result.	Remarks.	Case.
Perforated duodenal ulcer.	No operation.	Half inch.	Anterior surface of first part.	—	—	—	Died.	Condition too bad to allow of operation. Died 12 hours after perforation.	1
Intestinal obstruction.	39 hours.	One-fifth inch.	Half-inch beyond pylorus.	Ulcer not found at operation.	Irrigation.	Suprapubic and epigastric.	,,	Advanced general peritonitis.	2
Perforated gastric ulcer.	8 hours.	One-fifth inch.	Anterior surface of first part.	Ulcer excised; suture.	,,	Suprapubic and epigastric.	Recovered.	Abscess formed in right kidney pouch and drained 13 days later; second abscess opened near cæcum 22 days later.	3
Perforated duodenal ulcer.	24 hours.	One-third inch.	Anterior surface of commencement of second part.	Suture and omental graft.	,,	Suprapubic and epigastric.	Died.	Very large amount of free gas.	4
Perforated duodenal ulcer.	10 hours.	Quarter-inch.	Anterior superior surface, half an inch from pylorus.	Ulcer, excised; suture.	,,	Suprapubic, epigastric, and right lumbar.	Recovered.	Seen first in latent period.	5
Perforated duodenal ulcer.	9 hours.	One-fifth inch.	Anterior surface of first part.	Sutured.	,,	Suprapubic and right lumbar.	,,	Very intense jaundice three days after operation; gradually subsided.	6
Provisional of perforated duodenal ulcer.	12 hours.	One-eighth inch.	Anterior surface very close to pylorus.	,,	Mopped out.	Suprapubic, epigastric, and right lumbar.	Died.	—	7
Perforated ulcer.	24 hours.	One-third inch.	First part.	,,	,,	Epigastric.	,,	Post mortem two other ulcers found which had not perforated; pus between liver and diaphragm and in right kidney pouch.	8
Perforated ulcer.	3½ hours.	That of small quill.	Anterior surface of first part.	Omental graft.	Irrigation.	Suprapubic and epigastric.	Recovered.	—	9
Intestinal obstruction.	No operation.	?	Half inch beyond pylorus.	—	—	—	Died.	Died whilst being prepared for operation. There was found post mortem an abscess in right kidney pouch reaching up under liver and down to outer side of cæcum; this had burst into the general peritoneal cavity.	10
Appendicitis.	18 hours.	That of goose-quill.	Immediately to duodenal side of pylorus.	Sutured.	Mopped out.	Appendix region, epigastric, and right lumbar.	,,	Had a small right-sided omental hernia to which pain of onset was referred.	11
—	No operation.	Three-quarters inch.	Half-inch beyond pylorus.	—	—	—	,,	Post mortem abscess in right kidney pouch reaching below as far as transverse mesocolon and above extending beneath diaphragm; also general peritonitis. Died seven days after perforation.	12
Appendicitis.	5 days.	One-third inch.	Anterior and upper surface of first part.	Ulcer not found at operation.	Mopped out.	Epigastric and appendix region.	,,	Appendix found normal. Duodenum was next explored, but patient's condition became so bad that operation was abandoned and the patient died just after reaching the ward.	13
Appendicitis or perforated duodenal ulcer.	72 hours.	Quarter inch.	Anterior surface of first part.	Sutured and omental graft.	Irrigation.	Epigastric, appendix region, and right lumbar.	Recovered.	Diffuse peritonitis. Chief collections of pus and fluid (1) in right kidney pouch; (2) inner side of cæcum; and (3) pelvis. Later, right subphrenic abscess, pleural effusion. Abscess drained, general peritonitis, lavage, drainage, recovery.	14

uninterruptedly to the right of the lateral hepatic ligament to the upper surface of the liver as far as the reflection of the falciform ligament. Downwards this space is limited in part by the reflection of peritoneum from the hepatic flexure of the colon on to the face of the kidney and the second part of the duodenum. When fluid had filled up the right kidney pouch it always followed certain definite paths. (Fig. 1.) It did not pass through the foramen of Winslow into the lesser sac of peritoneum. It had little tendency to find its way beneath the diaphragm. It always descended along the outer side of the ascending colon as far as the brim of the pelvis. The level of the fluid rose until it reached the level of the pelvic brim. It then overflowed into the pelvis. It must be remembered that this collecting body of fluid is dammed up on the inner side by the ascending colon. If this has no mesentery the colon may be so bound down into the loin that the level of the fluid reaches above the summit of the ascending colon "dam" before it rises above the level of the brim of the pelvis. (Fig. 2.) In this case the fluid will first leave the right kidney pouch by crossing the ascending colon—usually a few inches below the hepatic flexure. Even if the fluid takes this course it still tends to flow to the appendix region, guided thither by the obliquity of the mesentery downwards and to the right and by the slope of the abdominal wall away from the middle line. It does not directly invade the left half of the abdomen but crosses the termination of the ileum and reaches the right side of the pelvis practically at the same spot as before. There still remains the point as to what guides the fluid towards

FIG. 2.



Showing the posterior abdominal wall and the ascending colon. *a*, Brim of pelvis. *b*, Right kidney pouch. *c*, Hepatic flexure. The dotted line indicates the level of fluid, which in the upper diagram overflows first into the pelvis, and in the lower diagram overflows across the ascending colon before reaching the level of the brim of the pelvis. In a paper read before the Anatomical Society in March, 1906, by G. J. Jenkins and the present writer, a fold of peritoneum passing from the outer side of the ascending colon just above the cæcum to the abdominal wall was shown to be of almost constant occurrence. It was pointed out that this fold aided in limiting the upward spread of fluid from the appendix region. It also acts as a barrier to the flow of fluid from the duodenum down the outer side of the colon, and may be the determining factor in causing the fluid to cross the ascending colon rather than the brim of the pelvis at *a*.

the right iliac fossa in the first instance. Moynihan,[3] in his papers on duodenal ulcer, to which I wish to confess myself indebted, describes a "hillock" in the transverse mesocolon and figures it. The figure in question is, I venture to think, somewhat inaccurate anatomically, for there is at the point where the hillock is shown a reflection of peritoneum to the first part of the duodenum and stomach whence it is reflected off as the great omentum. When the fluid reaches the upper aspect of this part of the transverse mesocolon it cannot run to the left because of this reflection

[3] THE LANCET, Dec. 14th, 1901, p. 1656.

of peritoneum. If the body be erect gravity causes the fluid to make for the only lower opening of the pouch which exists—the passage along the outer side of the colon—and thus to the appendix region. In this case the foramen of Winslow is protected by the fact that it is placed above the duodenum. If the body be on the back the fluid is guided by gravitation to the renal pouch, the foramen of Winslow being again at a higher level. From the renal pouch the slope of the posterior abdominal wall guides the fluid down towards the appendix.

I should not have dealt with this question at what may appear unwarrantable length were it not that this experimental evidence is confirmed by:—

2. *Results of operations*, which have shown not infrequently the extravasated fluid limited to the right renal pouch and extending down as far as the outer side of the cæcum, without overflowing into the pelvis. The condition found at the operation on Case 14 in the table is of interest in this connexion. There was a collection of fluid and pus bounded on the outer side by the cæcum, limited internally by coils of small intestine, and in front by the great omentum which was loosely attached to the cæcum and intestine by recent lymph. The space thus bounded was continuous over the termination of the ileum with the cavity of the pelvis which also contained fluid and pus. In an upward direction there was a well-defined track of suppuration crossing the ascending colon just below the hepatic flexure and leading to an accumulation of several ounces in the right kidney pouch. The anterior surface of the first part of the duodenum was found perforated and there were no surrounding adhesions whatever, but the course of the escaped fluid had evidently followed exactly the course which was described under the heading of "Experimental evidence."

3. *Situation of abscesses.*—In all cases of which I have records, in which abscesses had formed as a result of acute perforated duodenal ulcer, the walls of the abscess cavity have been formed by the structures mentioned above as limiting the right renal pouch. As will be stated later, this collecting of the fluid in the right kidney pouch indicates what I think to be an important point in the treatment.

THE SYMPTOMS PRECEDING PERFORATION.

In nine out of the 14 cases there was a history of preceding digestive disturbances, but in only three were the previous symptoms suggestive of duodenal ulceration. The symptoms in these three cases were as follows:—Case 1, pain in the right hypochondrium two and a half hours after food for some years, vomiting, and hæmatemesis; Case 2, occasional pain above, and to the right of, the umbilicus two hours after food for three months; and Case 3, pain in the right hypochondrium and vomiting three hours after food for 12 months. It will be noticed that the situation of the pain and the time elapsing between the taking of food and the onset of pain and vomiting were the only points in the history which were of service in making a diagnosis. Melæna did not occur in any case and hæmatemesis in but one.

THE SYMPTOMS OF PERFORATION.

In most instances the perforation took place whilst the patient was at work—in two cases when lifting a heavy weight. The characteristic sudden severe pain in the abdomen was the initial symptom of perforation in every instance. Speaking generally, collapse was marked; the gravity of the condition was obvious in the appearance of the patient. There were epigastric pain and tenderness, whilst the abdominal wall moved but little with respiration and was rigid, especially in the epigastric region. Having thus briefly epitomised the symptoms which would be present in a typical case, I will pass on to point out the particular symptoms which have proved in practice of most service in diagnosis. It is necessary here to remark by way of preface that four stages, artificial it is true yet in many instances having real clinical entities, may be recognised: (1) the period of collapse; (2) the latent period (accentuated by the administration of morphine); (3) the period of return of symptoms, quickly merging into (4) the period of general septic peritonitis.

Standing out prominently as of value in perforative intraperitoneal lesions are the condition of the pulse and the general appearance of the patient. The pulse-rate at the time of examination was in ten cases from 100 to 144, in seven of these over 120. In two the pulse was rapid but the actual rate was not noted. In one case in which perforation took place in hospital the pulse noted immediately after

perforation was 50 to the minute, small, and easily compressible—obviously a pulse of severe shock. In the remaining case seen during the latent period the pulse was 68 and of good quality. The pulse-rate in this case an hour later was 100. It is the careful observation of this increase in the pulse-rate which will save a case of perforated ulcer in the latent stage from being left to develop septic peritonitis before the urgency of the abdominal condition is realised.

Even more important indications are given by the general condition of the patient—in every case the patient "looked very ill"—and the appearance of comfort is the one normal characteristic which the subject of a perforated ulcer fails to regain in the latent period. The pulse and temperature may be normal; there may be little or no complaint of abdominal pain; rigidity and distension are remarkable by their absence; abdominal movement is good and the patient suffers palpation and percussion without complaint; yet with all this there is something of anxiety in the expression—something of pallor—something of restlessness—constituting the "looking ill" which gives rise to a suspicion of a grave condition which the rising pulse-rate soon confirms.

These symptoms will, however, do no more than point to a perforative lesion, but there are signs which may lead to the correct localisation of that lesion at the duodenum. These may be enumerated as follows: 1. The history of the case may suggest the presence of a duodenal ulcer; as already mentioned, this was so in three only of my 14 cases. 2. The localisation of the original pain of perforation to the right hypochondrium. This must, I think, be looked upon as the most trustworthy and most frequently available aid to diagnosis. In 12 cases the onset of pain was above the umbilicus; in eight of these it was to the right of the middle line—that is to say, in the right hypochondrium. In the other two cases the pain was referred to the lower part of the abdomen and the right inguinal region respectively. 3. The site of pain, tenderness, and rigidity at the time of examination. An interval has elapsed since the perforation and there is no longer that localisation which was noted in speaking of the site of the original pain. In six cases only of my series were the above symptoms referred to the right side of the abdomen at the time of examination and in these six it was the right side of the abdomen generally, including the appendix region, that was affected rather than the hypochondrium only. In the other seven cases the pain, tenderness, and rigidity affected the abdomen as a whole. 4. Symptoms referred to the right side of the abdomen and most marked in the appendix region but with a definite history of onset in the right hypochondrium. Under this heading—of cases mimicking appendicitis—it is possible to class a large proportion of perforated duodenal ulcers. As an example, of Moynihan's collection of 51 cases 19 had been diagnosed as appendicitis.

It is certain, however, that if the possibility of perforated duodenal ulcer be always kept in mind in examining a case of severe intraperitoneal lesion the presence of such a perforation will at times be erroneously diagnosed. I will very briefly mention a case in which this took place. A man, aged 38 years, whilst on a cycling tour experienced severe and agonising pain in the epigastric region. He felt faint but did not vomit. He was taken to the hospital in a collapsed condition. The abdomen was rigid, especially above the umbilicus, and the upper segment of the right rectus was held like a board. A diagnosis of perforated duodenal ulcer was made. Operation showed a gangrenous perforated appendix with an abscess which had burst, causing general peritonitis.

Whilst considering the differential diagnosis of duodenal perforation from appendicitis it is important to remember that the two conditions may co-exist. As bearing on this point I may mention a case of appendicitis with perforated gastric ulcer, recorded elsewhere, which was in St. Mary's Hospital.[4] The appendicitis was obvious; the appendix was removed, but the condition found suggested some further lesion and a search revealed a perforated gastric ulcer. The patient recovered. Five other cases[5] have been reported of late in which the combination of appendicitis with perforated gastric or duodenal ulcer was met with and I may add to these a case of which I have notes in which after death abscesses were found in connexion with ulcers of the cæcum and stomach.

[4] Warren Low: THE LANCET, June 25th, 1904, p. 1789.
[5] Bolton Carter: THE LANCET, Nov. 2nd, 1901, p. 1194. Ledlard and Sedgwick: THE LANCET, Sept. 10th, 1904, p. 761. Watson Cheyne: THE LANCET, June 11th, 1904, p. 1641.

In women the symptoms of a perforated ulcer may be closely simulated at or about the time of a menstrual period. The symptoms commence suddenly with a sharp pain in the abdomen, which may be distended, tender, and moving but little with respiration. The pulse is rapid and the temperature often subnormal. If the pain be referred to the epigastrium the diagnosis of perforation of the stomach or the duodenum may be made but if the pain be located in the right iliac fossa, as it was in two out of three cases I have in mind, appendicitis is closely imitated. In every case, however, it was noted that the patient "did not look very ill" and in every case recovery ensued within a week. The actual pathological lesion appears to be hæmorrhage into the ovary, as in a case recently reported by Waring.[6]

The question of the diminution or absence of liver dulness may be mentioned here. In these 14 cases liver dulness was normal in three, absent in three, slightly diminished in three, whilst in five of them there is no definite statement available. I think that the same variation will be found if a series of gastric and duodenal ulcers which have not perforated be examined. I recently saw a case in which three independent observers found obliteration of liver dulness for a distance of three inches above the right costal margin. Operation revealed cholecystitis and a slightly enlarged liver. Lindsay Steven and J. W. Allan[7] recorded six cases of duodenal and gastric ulcer in which without perforation there was marked diminution of liver dulness. Pearson[8] stated that in a series of cases admitted with hæmatemesis one-third had diminution of liver dulness independently of perforation. In the cases in my series in which there was obliteration of liver dulness the symptoms of perforated ulcer were extremely obvious.

TREATMENT.

Immediate operation is agreed upon. Statistics of mortality in cases which have come into the hands of the surgeon late in their course are depressing. After the onset of general septic peritonitis there is a very slight chance of recovery. Even in those rare cases in which, after a limited extravasation into the right kidney pouch, adhesions have formed and an abscess has developed the mortality is equally high: general peritonitis sets in from the giving way of adhesions, whilst in four out of five cases of localised abscess due to acute perforated duodenal ulcer, of which I have notes, there was pleural effusion, serous or purulent. The abdomen having been opened three points present themselves in reference to the management of the operation.

1. *The method of dealing with the perforation.*—(*a*) The ulcer may be excised, a procedure followed twice in this series. This may be impracticable and has the disadvantage of adding to the time taken by the operation. (*b*) The ulcer may be sutured. This was the procedure in four cases. (*c*) An omental graft may be utilised. This is especially useful where the sutures cut out owing to the friability of the tissues, or may be employed to reinforce a weak suture line. Omental grafts were made use of in three cases. The disadvantages of the last two methods is that the ulcer is left, but it seems that a subsequent gastro-enterostomy after recovery is safer than the prolonged original operation necessitated by excision of the ulcer.

2. *The question of irrigation.*—In seven cases general and profuse irrigation of the peritoneal cavity with hot normal saline solution was employed. Of these seven, five recovered. In four cases the peritoneal cavity was mopped out with moist swabs. Of these four all died. This would seem to offer as strong evidence in favour of irrigation as could be desired from a confessedly small number of cases. But, let me hasten to add, it is not "clean" evidence. There is another factor—the length of time elapsing between perforation and operation. The length of this interval in hours was: cases recovering, 3½, 8, 9, 10, and 72; cases dying, 12, 18, 24, 39, and 120. This interval I believe to be the most important point upon which the prognosis depends. I would urge, therefore, that in any published statistics on the value of irrigation this pre-operative interval should invariably be stated. Although the value of the evidence given by these cases must be discounted I would add that in the cases of perforated gastric ulcer I have seen the results have been much better when irrigation has been employed.

3. *Drainage.*—In none of these cases was drainage dispensed with. In four cases the drainage was suprapubic

[6] THE LANCET, May 6th, 1905, p. 1196.
[7] THE LANCET, July 11th, 1903, p. 98.
[8] THE LANCET, Nov. 28th, 1903, p. 150.

(for the pelvis) and epigastric. Two recovered, but one of these had to be drained in the right lumbar region after a few days. In five cases the drainage was suprapubic, epigastric, and right lumbar. Of these, three recovered. In two cases the drainage was epigastric only. Both died. Such evidence as can be gathered from these cases indicates that drainage should be suprapubic (for the pelvis) and right lumbar for the right kidney pouch. But I would suggest that the evidence I brought forward earlier in this paper with regard to the course taken by fluid points very strongly to the right lumbar and the suprapubic regions as the logical sites for drainage-tubes.

The character of the fluid extravasated has been held to give an indication as to whether it be the duodenum or the stomach which has perforated. In the cases which I have seen the character of the fluid gave no help whatever. Bile-staining may be present in gastric or duodenal cases; ill-digested particles of food are present in both; the reaction is markedly acid in the gastric perforation, but so it was in the cases of duodenal perforation in which I have tested it. In fact, it is in the main the gastric contents which escape through a hole in the duodenum. It is true that in some cases the fluid with the onset of peritonitis may become neutral or even alkaline, but this applies equally to both classes.

In concluding, I wish to thank the staff of St. Mary's Hospital for kindly allowing me to make use of their cases. Since this paper was written four other cases of perforated duodenal ulcer have been operated upon at St. Mary's Hospital with three deaths and one recovery.

Spanish-place, W.

CASES OF ERYTHEMA SCARLATINIFORME SENT INTO HOSPITAL AS SCARLET FEVER.

BY JOSEPH BEARD, F.R.C.S. EDIN., D.P.H. CANTAB.,
RESIDENT MEDICAL SUPERINTENDENT TO THE INFECTIOUS DISEASES HOSPITAL, BOOTLE;
AND
T. W. NAYLOR BARLOW, M.R.C.S. ENG., L.R.C.P. LOND., D.P.H. CANTAB.,
MEDICAL OFFICER OF HEALTH, BOROUGH OF BOOTLE, AND VISITING PHYSICIAN TO THE INFECTIOUS DISEASES HOSPITAL.

DURING the last four years we have observed steady progressive improvement as to the accuracy of diagnosis of infectious diseases amongst the cases sent into the infectious diseases hospital, and especially with regard to scarlet fever, but there is still considerable scope for the display of diagnostic acumen in some of the aberrant forms of acute infectious diseases and none the less in those cases where the clinical phenomena manifested resemble very closely acute infectious diseases. It is not our intention to cast reflection upon the diagnostic capabilities of our medical *confrères*, nor is it the object of these remarks to put before the profession an uncommon or rare disease but rather to be a reminder that an incorrect diagnosis has not rarely resulted in long and severe suffering and in many instances caused accidental infections leading to death. Cases not infrequently occur which in many particulars very closely resemble scarlet fever, both in the acute and convalescent stages, but as the profession has at the present time neither chemical nor bacteriological methods to aid them in the diagnosis of this disease, such as can be applied in the case of typhoid fever, diphtheria, &c., one oftentimes has simply to isolate the case and to await developments. During the last five months two cases have been received into hospital suffering from erythema scarlatiniforme which have been notified to the medical officer of health as cases of scarlet fever, and since erythema scarlatiniforme may so closely simulate scarlet fever in its early exanthematous stage as to deceive the most careful observer, we feel that we need not apologise for putting forward the notes of these two cases.

In the diagnosis of scarlet fever there is a tendency shown by practitioners to rely too much upon the character of the rash and to pay too little attention to the consideration of other and equally important factors in the diagnosis—namely, the condition of the tongue (and whether that condition is in the relation which it should bear to the rash and other signs, having regard to the time which has elapsed from the commencement of the illness), the general characteristics of the throat, the character of the onset, and the past history of the individual with respect to infectious sickness, exposure to infection, age of patient, &c., and, moreover, we are convinced that the two cases which follow, if they had been considered on the above lines, would have been missing from that column of the annual report which deals with cases sent into hospital wrongly diagnosed, and more especially the second of the two cases.

CASE 1.—A male, aged eight years, was admitted to hospital on Nov. 20th, 1905, as a case of scarlet fever. The history given was that he commenced with a sore throat three weeks before and that he had previously had scarlet fever and was in this hospital just 12 months previously for ten weeks. He had had measles when a baby but no other illness since. His temperature on admission was 97° F. On examination he was found to be desquamating upon the whole of the trunk and there were areas of erythema in those portions of the skin where desquamation was completed. The desquamating skin was in large flakes but much thinner and whiter than that found in scarlet fever. The skin of the extremities was quite normal. The throat, the tongue, the nose, the ears, the glands, and the urine were also normal. He was discharged on the tenth day quite free from desquamation and quite well. 12 months before the boy had been in hospital suffering from a moderate attack of simple scarlet fever when, on admission, he had a typical fading general rash, a raspberry tongue with a hyperæmic condition of the throat, and follicular tonsillitis. During convalescence he had otorrhœa, which, however, subsequently cleared up, and he was discharged from the hospital after a stay of 71 days.

CASE 2.—A male, aged 23 years, was admitted into hospital on Jan. 13th, 1906, notified as scarlet fever. The history given was that he became ill two days before with a rash on his chest and a slight feeling of soreness and stiffness about his throat. His temperature on admission was normal. The history he gave was that he had had several similar attacks, that he always peeled profusely, and that he had been in this hospital twice before in the same condition and once in one of the Liverpool city hospitals. On giving this history he was isolated and on examination he was suspected to be suffering from erythema scarlatiniforme. His condition was as follows. On the front and back of the chest there was a well-marked erythematous eruption, but it was not papillated, and the rash on the front of the chest was more marked than on the back. The erythema extended from the suprasternal notch (where it was sharply defined) to about the level of the umbilicus, where it gradually merged into a normal skin. The skin of the extremities was quite normal as was that also of the trunk below the level of the umbilicus. The tongue was slightly reddened and was covered with a thin grey coating but was not characteristic of any disease. The throat was very slightly reddened and the ears, the nose, the glands, and the urine were quite normal. On looking up the record of his previous admissions we found that the diagnosis on both occasions had been amended from scarlet fever to erythema scarlatiniforme. Forty-eight hours later the skin of the whole of the trunk was desquamating in large, thin, white flakes, not only the parts which were on the first examination erythematous, but also the remaining parts of the trunk where no erythema had been observed. The desquamating skin could be readily swept from the body by rubbing lightly with the finger but the most important feature of the condition at this stage was that there were larger areas of erythema, showing a peculiar glistening and greasy appearance, of those parts from which the superficial desquamation had taken place. Next day symmetrical patches of desquamation were seen in front of the elbow-joints, leaving the same erythematous base as observed on the trunk. Later in the day the hands and the adjacent parts of the wrists for about two inches also began to desquamate. The lower extremities did not show any signs of peeling and five days later the man was discharged from the hospital perfectly well.

With regard to the etiology of the disease, there is nothing in the history of either of the two cases to help us. The little boy was fairly well nourished and intelligent and had not suffered from any disease except measles and the attack of scarlet fever 12 months before. The man had not suffered from any other disease but the one he was sent in for, and he said that it was his eighth attack, the last being a few months before, when he did not go to a medical man

because he was always notified as suffering from scarlet fever and he was usually compelled to go into hospital, which he did not like. The affection is said to occur both in a mild and a severe form; in the case of the boy the attack was a mild one, there being on admission no trace of anything abnormal except the desquamation. The adult had had a moderately smart attack as he appeared to have begun with some amount of sore-throat, headache, and general malaise.

The diagnosis of these cases may present difficulties, and especially so if a casual examination of the rash alone be relied upon, for the rash may be general, and if, in addition, it be seen in an unfavourable light may very closely simulate the rash of scarlet fever. Mr. Malcolm Morris in his book on "Diseases of the Skin" writes thus of the diagnosis of erythema scarlatiniforme: "The average duration of the disease is from two to six weeks but in some cases lasts longer. Two types of the erythema may occur and can be recognised clinically, one running a more or less definite course and disappearing after a few weeks and the other type a severe and more prolonged one." Relapse is not uncommon, a fresh crop of eruption coming out before the first has disappeared. Erythema scarlatiniforme shows a marked tendency to recur (*vide* notes on second case), sometimes every year and sometimes at shorter intervals. (In the second case the longest interval was just over four years and the shortest about four months.) "The disease derives its chief importance from its resemblance to scarlet fever which may be so close that the most capable observer may be unable to give a definite opinion as to the nature of the rash during the first few days. The most striking point of distinction is the early commencement of desquamation in erythema scarlatiniforme, which may last for several weeks and sometimes indefinitely. In the case of a person who has had previous attacks the history is helpful, but if there is any doubt the case should be isolated. It is also very probable that some of the cases of so-called recurrent scarlet fever are really due to this disease."

In conclusion, we would again call attention to the important points in differential diagnosis, three of which should be borne in mind—viz., the very early onset of desquamation, the desquamation taking place while the erythema is in the florid stage, and thirdly, the erythematous base observed after desquamation and which remains for some time, with its peculiar glistening and greasy appearance.

Bootle.

FATAL HÆMORRHAGE IN OPERATIONS UPON THE CHEST WALL FOR EMPYEMA.

BY THOMAS OLIVER, M.A. DURH., M.D., LL.D. GLASG., F.R.C.P. LOND.,

PHYSICIAN TO THE ROYAL INFIRMARY, NEWCASTLE-UPON-TYNE.

THE removal of serous fluid from the chest in pleural effusion is usually not a serious operation, and yet, as indicated by me,[1] serious symptoms may arise and even death may occur in cases where puncture of the thoracic wall has been made either for diagnostic or curative purposes. The experience of other physicians expressed in the pages of THE LANCET and elsewhere since then shows that this untoward event is not so rare as at first sight it appears. To Dr. George Carpenter belongs the honour of having first called attention to these risks.[2] In England Dr. A. E. Russell's paper was one of the earliest communications upon this subject. In the *British Journal of Diseases of Children* for October, 1905, Dr. J. H. Wilks reports a fatal termination to a case in which puncture of the chest wall to evacuate pus was followed by hæmorrhage through the needle and by the mouth. An interesting review of the subject appears in THE LANCET of Dec. 16th, 1905, p. 1802, in the form of a letter from Dr. J. M. Fortescue-Brickdale. To what I published on sudden death from exploratory puncture of the chest I am now desirous of adding a few remarks upon the occurrence of fatal hæmorrhage in patients whose chest wall had been incised in order to give vent to pus accumulated within the pleural cavity. I shall preface my remarks by giving briefly the details of my last case—one of double pleuro-pneumonia followed by empyema and accompanied by diplococcal arthritis. The patient died from hæmorrhage a few hours after incision of the chest wall.

A young man, aged 19 years, was seen by me in consultation with Dr. J. T. Dunlop of Newcastle on the fifth day of the illness which had begun with a rigor followed soon after by pain in the chest and difficulty of breathing. Two days afterwards there were cough and the expectoration of a tenacious rusty-coloured sputum. When I saw him he was extremely ill, he had an anxious expression, and there were well-marked herpes at the left angle of the mouth and a painful swelling of the left wrist-joint. The pulse was 126, the respirations were 46, and the temperature was 102·5° F. There were dulness on percussion of the chest at both bases, especially posteriorly, well-marked tubular breathing, and here and there coarse friction sounds; also small crepitations were heard over the base of the left lung in front. The vocal resonance was increased. In the expectoration diplococci were found. I had the patient removed into the Royal Infirmary and for the first two days he seemed to improve. The painful swelling of the left wrist subsided, only, however, to reappear several hours afterwards. With the return of the arthritis there was also evidence of the pleuro-pneumonia having extended. On the evening of the eighth day of the illness the temperature suddenly fell from 103° to 98°, the pulse from 138 to 100, and the respirations from 56 to 36. The patient expressed himself as feeling more comfortable but the favourable condition was not long maintained. Two days afterwards the temperature rose to 101°, the pulse to 140, and the respirations to 60. My house physician put a needle into the right chest and drew off a syringeful of pus. Two hours later, under local anæsthesia induced by ethyl chloride, the right chest was incised and forthwith there escaped blood with flakes of purulent lymph but the pus was only limited in quantity. A very short rubber tube was inserted but the patient's pulse became small and rapid and the hæmorrhage continued partly into the pleural cavity and partly through the tube. The patient died 13 hours after the operation from exhaustion and the continued bleeding.

At the necropsy the incision in the chest wall was carefully examined without revealing any injury to the intercostal artery. Subsequently this vessel was dissected out in its entirety and found to be quite intact. The lung was collapsed at one part and covered with purulent lymph. No injury to the surface of the lung could be detected. The lower part of the lung was consolidated. There were consolidation of the base of the left lung, signs of recent pleurisy, and some purulent lymph. The pericardium contained a few ounces of clear fluid. The heart was normal; the brain was slightly œdematous. The left wrist-joint contained pus, of which a culture was made at the College of Medicine by Dr. Horace B. W. Paige who reported the presence of Friedländer's diplococcus and the complete absence of the pneumococcus of Fränkel.

Of fatal hæmorrhage following incision of the chest in empyema I have had experience of two other cases. The first was several years ago, when my house physician, in incising the chest wall of a young sailor, gave vent to a large quantity of pus. At the same time there occurred very free bleeding which was uncontrollable and from which the patient died on the following day. At the post-mortem examination no explanation was found of the hæmorrhage. My third patient was a woman, aged 42 years, who was suffering from an encysted empyema which was discharging itself by the mouth. A needle having been inserted into the chest and pus found, one of my surgical colleagues incised the chest wall. A few ounces of pus escaped, accompanied by a fairly large quantity of blood. Almost immediately afterwards hæmoptysis in addition occurred. Through the external wound there escaped pus and a diminishing quantity of blood for the next three days, when all at once very profuse hæmoptysis occurred and the bleeding from the wound recommenced. The temperature now rose rather quickly, breathing became difficult, and the patient was extremely restless. Death followed after another copious hæmorrhage from the lung and from the incised wound in the chest wall.

The pathology of these cases is obscure. Naturally injury to the lung or to the intercostal arteries suggests itself, a suggestion which the suddenness and the profuseness of the

[1] THE LANCET, Jan. 2nd, 1904, p. 26.
[2] American Journal of the Medical Sciences, October, 1893.

bleeding rather tend to confirm, and yet, as in the first case, although Dr. A. Parkin and Dr. W. E. Hume at the necropsy examined the interior of the chest carefully, no sign of injury was apparent either on the surface of the lung or in the intercostal artery. As the hæmorrhage always occurred in patients whose temperature was high it may be that a poisoned state of the blood is responsible for the bleeding, and that alone or combined with alteration of pressure. The blood-vessels would become unhealthy and if injured would probably not contract so well. They might rupture as a consequence of malnutrition and sepsis. It is difficult to explain the hæmorrhage in such cases, especially when after death careful examination failed to reveal the presence of a bleeding point.

Newcastle-on-Tyne.

A CASE OF FRACTURE OF THE SURGICAL NECK OF THE HUMERUS.

BY F. C. WALLIS, M.B. CANTAB., F.R.C.S. ENG.,
SURGEON TO CHARING CROSS HOSPITAL.

THE patient, a man aged 27 years, fell through a lift-hole striking the edge of the hole with his left shoulder. On admission to Charing Cross Hospital he was found to have a fracture of the surgical neck of the humerus with shortening of one inch. Splints with extension failed to keep the fragments in good position, so operation was decided upon.

Three weeks after the accident the following operation was performed. The fragments were reached by separating the fibres of the deltoid and pulling aside the tendon of the biceps. The upper fragment was found to be tilted outwards and backwards; the lower was drawn upwards and inwards. (Fig. 1.) Extension and manipulation failed to get

FIG. 1.

FIG. 2.

the fractured surfaces together. The arm was then raised to full extension; this brought the lower fragment to the upper. (Fig. 2.) The two were then fixed together by two staples. (Fig. 3.) The arm was next brought down to the side, the two fragments moving together. (Fig. 4.) The wound was then closed and the stitches were removed on the ninth day.

FIG. 3.

FIG. 4.

The main reason for publishing this case is to show the method by which the ends of the bone were joined together with staples. The fracture in this case was really higher than the surgical neck and no form of manipulation had any good result until that shown in the diagram was adopted. The inability to bring the ends in apposition in fractures of this kind has usually resulted in excision of the head of the bone. If the plan adopted in this case is carried out I believe that excision of the head of the bone will practically never be necessary in fractures of this character.

Harley-street, W

A CASE OF PRIMARY SARCOMA OF THE LUNG.

BY H. W. WEBBER, M.D. LOND., F.R.C.S. EDIN.,
ASSISTANT SURGEON TO THE SOUTH DEVON AND EAST CORNWALL HOSPITAL.

THE patient was a well-built man, aged 29 years, and above the average physique. He had been under the care of medical men in Chicago for three months for anæmia and loss of strength and was sent to Europe for a change of air and rest. While on the steamer he had pain in the left side and shortness of breath and was treated by the ship's surgeon for pleurisy. On arrival of the ship at Plymouth on August 16th, 1904, he was landed and taken to a hotel on a stretcher. He was at once seen by Mr. H. H. Parsloe, who found him collapsed, breathing with difficulty, anæmic, complaining of great pain in the epigastrium, and with a weak pulse of 140 per minute. Morphine and strychnine were given hypodermically and it was found on examination that there was a considerable pleural effusion on the left side. This was aspirated in the eighth left interspace below the angle of the scapula, and one pint of claret-coloured fluid was drawn off. On standing, about one-fourth of this subsided to clot, leaving the remaining three-fourths as pinkish serum. After the aspiration there remained an area dull to percussion below the eighth rib extending forwards to the posterior axillary line and over this area tubular breathing could be heard. The patient's respiration became easier and he could sit up in bed.

On August 17th and following days the epigastric pain was constant and severe, requiring a hypodermic injection of one-quarter of a grain of morphine every four hours. The liver was found to be enlarged, the edge being felt three inches below the costal margin. The stomach was much dilated. The pleural effusion steadily re-accumulated and on the 23rd the left cavity was aspirated again and one and a half pints of blood-stained fluid were removed. The patient's pulse was now 140 per minute, very weak, and the anæmia was marked. On the 28th Mr. Parsloe and myself consulted as to the advisability of a third aspiration, as the fluid had again accumulated. We decided, in view of the evident approach of a fatal termination, not to aspirate again. The patient died on the 31st.

At the post-mortem examination the stomach was found to be much dilated, the great curvature being half-way between the umbilicus and the iliac crest. The pylorus was normal and there was no pyloric obstruction. The liver was large, friable, and fatty. There was excess of pericardial fluid and of epicardial fat. The left pleural cavity contained three pints of blood-stained fluid. The lower three-fourths of the left lung were replaced by a fleshy, nodulated, hæmorrhagic growth, there being only part of the left apex remaining as lung tissue. Microscopically this was found to be a very hæmorrhagic mixed-celled sarcoma.

Plymouth.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A NEW "CHAUFFEUR'S FRACTURE."

BY STANLEY RAW, M.D., B.S. DURH., F.R.C.S. EDIN.

I WAS recently consulted by the driver of a motor-car who asked me to examine his hand as he had injured it whilst starting the car ten days before he came to see me. Since that time he had had a great deal of pain in the hand and it was now beginning to swell. The car was driven by a 10 to 12 horse-power two cylinder engine. On the day of the accident it was proceeding along a busy thoroughfare at a speed of about six miles an hour, the engine being well governed, but having the spark fully advanced. For some unexplained reason the car suddenly stopped and as there was a good deal of traffic in the road the driver quickly jumped from the car and went to the starting lever; in his

hurry he neglected to retard the spark, and taking a tight hold of the handle he gave it a sudden pull, when, instead of starting, the engine fired back and he received a violent shock on the hypothenar eminence. As an interested crowd was now collecting the injury was not taken much notice of and the driver, retarding the spark, quickly restarted the engine and proceeded on his way.

When I first saw him, which, as already stated, was ten days after the accident, there was a prominent swelling over the proximal half of the fifth metacarpal bone of the right hand, and on manipulating the bone I expressed the opinion that it was fractured. In order to decide the diagnosis, I next day sent the patient to have a skiagram taken and the fifth metacarpal bone was seen to be fractured at the point of junction of its base and shaft. The picture was not so clear as it would have been had the hand been radiographed immediately after the accident as there was a large amount of temporary and partially impervious callus showing. The patient made an uneventful recovery.

Several cases of fracture of the lower end of the radius have been recorded as the result of firing back of motor-car engines when attempts have been made to start them whilst the spark was advanced but I have seen no case recorded in which a fracture of any other bone occurred during this manipulation. The fact that in this case it was the fifth metacarpal bone which gave way is sufficiently accounted for when the conditions under which the accident occurred and the various factors at work are considered. First, in the hurry, a tight and strong grip was taken of the starting lever, the driver's hand being passed so far round the handle that its olivary end rested on the hypothenar eminence; and secondly, the spark was so far advanced that any back-fire occurring was sure to be a sharp one and such as would allow no time for the release of the handle. The quick recoil was therefore transmitted most forcibly through the most prominent part of the handle—namely, its olivary end—which was resting directly over the portion of bone fractured. Had a less tight grip of the handle been taken the principal effort required to start the engine would have been exerted by the thumb and index finger and therefore when the back-fire occurred one of two things might have happened—viz., either the handle would have flown from the grasp altogether or the force would have been transmitted through the first and second metacarpal bones to the lower end of the radius, resulting in a fracture of that bone.

Sunderland.

NOTE ON A CASE OF TETANUS AFTER THE INDUCTION OF PREMATURE LABOUR.

By W. HERBERT GREGORY, M.D., C.M. EDIN.

THE patient in the present case was a multipara, 42 years of age; she had had nine pregnancies and one miscarriage and she missed a period on Sept. 29th, 1905. Hæmorrhage, sometimes slight, sometimes amounting to flooding, came on in the middle of November and continued for ten weeks. I made examinations on several of these occasions but could never find anything abnormal. Complete rest in bed was ordered and small doses of opium were given. On Jan. 26th, 1906, a serious hæmorrhage occurred; the os uteri was found to be undergoing dilatation and a miscarriage was evidently threatening. With the assistance of Dr. George Savege, who kindly gave chloroform for me, I dilated the os digitally and removed a four months fœtus. There were no trouble with the placenta and no post-partum hæmorrhage. All went well for six days, the temperature being normal and the pulse-rate never above 80. The discharge also had practically stopped at the end of that time. On the evening of Feb. 1st the patient complained of stiffness of the muscles of the neck. I saw her on the next morning and found her head retracted and the jaws tightly closed. There was typical risus sardonicus and she spoke with great difficulty. I had her at once removed to the Cottage Hospital here so as to have her under close observation. Tonic spasms involving the muscles of the trunk and limbs came on in the afternoon and in the paroxysms a condition of pleurosthotonos was present. Feeding had to be carried on by the bowel as any effort to feed by the nose or round the teeth by a tube brought on a paroxysm. There was much pain during the spasms, especially in the region of the neck, also great lividity of the face and neck, profuse perspiration, and rapid breathing. The patient was quite conscious during the spasms, which increased in number and intensity on Feb. 3rd, there being from 25 to 30 on that day. Her temperature continued normal throughout, but her pulse was feeble and irregular, especially after a paroxysm. Death occurred at 10.20 A.M. on the 4th from asphyxia due to spasm of the respiratory muscles. Antitoxic serum, obtained from Messrs. Parke, Davis and Co., was injected in doses of 10 cubic centimetres every four hours and chloral and bromide were given by the rectum, but nothing seemed to have any effect except chloroform, which was administered during the spasms. The germ must have entered the patient's system through the placental site, as there was no tearing of the os uteri during dilatation, the uterus was well douched after being emptied, and the strictest asepsis was observed throughout the operation. The patient's house was situated in the country but there had been no case of tetanus either in human beings or lower animals anywhere in the neighbourhood for years. Puerperal tetanus in this country must be rare and, as I see from the text-books, is attended with a very high mortality.

Beverley.

PILOCARPINE AND THE MENTAL FACTOR.

By WILLIAM ROPER, M.A. OXON., L.R.C.P., L.R.C.S. EDIN.

PROFUSE perspiration is frequently a means of saving life and the only drug always to be relied on for this purpose is pilocarpine. It seems to me, therefore, of great importance that the danger attending the exhibition of this drug should be clearly present to our minds. For there is certainly a danger in any impediment to vigorous expectoration, especially when sialagogue action is well marked, although this impediment may not be strictly physical in its cause. A frequent use of the drug in full and sometimes large doses has led me to the conclusion that the dangerous symptoms sometimes seen are mental in origin. This view is illustrated in the following case, where the only bad effects of which I have ever had experience (and I have given two-thirds of a grain hypodermically more than once to people in worse physical condition) occurred. The patient took one-third of a grain of pilocarpine nitrate by the mouth in bed one night with excellent effects and the next morning he took one-twelfth of a grain, or one-quarter the previous dose, and went about his duties, which were military, under conditions of no particular exertion. Vigorous expectoration of saliva was, however, inhibited with the result that he was soon in a condition of collapse which fortunately passed off without any permanent bad effect. I was most careful to take particular note in writing of the doses, so that it might be observed that the dose attended with bad effects was one-quarter of what was taken with good effect the night before.

Bridport.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

Results of Operation for the Radical Cure of Hernia.—Angiosarcoma of the Breast.

A MEETING of this society was held on March 26th, Sir LAUDER BRUNTON, the President, being in the chair.

Mr. J. HUTCHINSON, jun., read a paper on the Results of Operation for the Radical Cure of Hernia, which we hope shortly to publish in full.—In the discussion which followed Mr. F. S. EVE said that in the early part of the year 1899 he wrote to all the patients upon whom he had operated for the radical cure of inguinal hernia between the years 1888 and 1898 inclusive. The total number of cases operated on was 141. This total was made up as follows: Bassini's operation, 71 cases; Macewen's operation, 15; ligature of the neck of the sac in adults, 26; and operations on children under the age of ten years, 29. Of the 112 adults operated on not one died; of the patients operated on by Bassini's method, 40 were seen and were available for statistical inquiry. Of these, three had recurred, a percentage of

7·5. Of the cases operated on by Macewen's method all occurred prior to 1894 and too small a number reported themselves to be of any value. Of the 26 cases treated by simple ligature of the neck of the sac, 24 of the operations were performed prior to the year 1896. Since then he had in every case employed Bassini's method. All of these patients were under 29 years of age and the simpler operation was adopted because the hernia was small, the internal ring narrow, and the obliquity of the canal not lost; or the operation was performed for strangulation and it was not advisable to prolong it. Of these 26 cases 16 reported themselves, with three recurrences, being a percentage of 18·7. In the majority of cases of Bassini's operation kangaroo tendon was used for the deep sutures. Latterly, however, Mr. Eve had used silk with equally satisfactory results. Of the 29 cases operated on in children under ten years of age, 17 were under two and five under one year of age; in four instances the hernia was strangulated. No patient died as a result of the operation, but one contracted diphtheria and died in a fever hospital. 20 of these cases were available for statistical purposes and only one had slightly recurred, making an average of 5 per cent. of recurrences. 18 of those cases were treated by ligature of the neck of the sac, and two were operated on by Bassini's method.—Mr. H. J. WARING, referring to the recurrence of hernia after radical operation, said that the great majority of recurrences were those in which suppuration had taken place. The percentage of recurrences was less in congenital than in acquired hernia. After ventral or umbilical hernia a truss was often, but not always, necessary. Kangaroo tendon was not so satisfactory as silk or chromicised catgut in his experience. In femoral hernia the results very much depended on what kind of operation was done.—Mr. T. H. KELLOCK drew a distinction between completely or partially reducible hernia. He also emphasised the necessity of removing the omentum and other contents of a hernial sac. The weakening of the external oblique muscle by slitting it up, as in Bassini's operation, was responsible for a certain proportion of recurrences. He declared himself in favour of silk for the deep sutures.—Mr. HUTCHINSON replied.

Mr. H. BETHAM ROBINSON described a case of Angio-sarcoma of the Breast, which was removed from a married woman, aged 38 years, who had had no children, in December, 1904. The growth had been noticed accidentally in the right breast three months before and had progressed slowly without pain. At the lower part of the gland close to its margin was a wedge-shaped nodulated lump of the size of a small hen's egg; its edge was fairly well defined and it was rather elastic. It was not adherent to the skin or fixed to the deep tissues and there was no retraction of the nipple. No enlarged glands were to be felt. There was no alteration of temperature. The patient's general health was good and there was no loss of flesh. The whole breast was removed and the axilla cleared out, the glands in the apex of the latter proving to be slightly enlarged. On section the growth was of a reddish colour, soft, and granular, with a definite capsule from which fibrous septa passed inwards. Histologically the growth proved to be round-celled sarcoma specially grouped round vessels, the cells being held together by a reticulum resembling lymphoid tissue; the tumour was therefore an angio sarcoma. The enlarged glands that were examined showed no secondary deposit. This form of tumour was very rare and descriptions of it were very scanty. The case was like others described by Schmidt.[1]

PATHOLOGICAL SOCIETY OF LONDON.

Dysentery in South Africa.—On the Phagocytosis of Bacillus Typhosus.—A Simplified Method of enumerating Leucocytes.—Demonstration of the Undulating Membrane of Spirochætæ.

A LABORATORY meeting of this society was held at the Royal Army Medical College on March 20th, Lieutenant-Colonel W. B. LEISHMAN, R.A.M.C., being in the chair.

Lieutenant-Colonel C. BIRT, R.A.M.C., read a paper on Dysentery in South Africa. He said that armies in the field had hitherto been always attacked by dysentery which had caused a mortality of from 5 to 10 per 1000 strength. The war in South Africa was no exception. Among the necropsies which he had made 58 deaths were due to dysentery and 188 were due to enteric fever. With improved sanitation consequent on cessation of hostilities the incidence of the disease had become much reduced among the troops, but it was still prevalent among the civil population. Nearly one-sixth of the deaths in Johannesburg were recorded under the headings of "dysentery," "enteritis," and "diarrhœa." Lieutenant-Colonel Birt isolated Shiga's bacillus in 26 cases of dysentery out of 55 examined. The method adopted was as follows. (It will be noted that mannite fermenters were excluded by it). A stool from a patient in the early stage of the disease was selected as free from fæcal matter and urine as possible, and examined immediately for living amœbæ. These were found once only. Bruce, who carried out investigations during the war, was unsuccessful in his search for them. Beveridge detected them three times in 143 patients. A fragment of the blood-stained mucus was washed in sterile normal salt solution, transferred to a second tube of this fluid, and shaken vigorously. As a rule, no further dilution was necessary. The bacteria incorporated with dysenteric slime were not numerous. Plates were made of this on Drigalski and Conradi's medium, taurocholate neutral red, crystal violet lactose agar, lactose litmus agar, or ordinary agar (+ 25 Eyre's scale). Next day the more delicate colonies were transplanted into Doerr's modification of Barsikow's medium which consisted of nutrose, mannite, litmus, and water. Shiga's bacillus left this unchanged. The colon bacillus curdled and turned it pink. Subcultures from the unaltered tubes were made on agar which, if they proved to be Gram-negative rods, were put up in sedimentation tubes with the patient's serum, normal human serum, and with the serum of an animal immunised with Shiga's bacillus. In several instances almost pure growths of Shiga's bacillus were obtained directly from the dysenteric mucus emulsion. These were compared with Shiga's, Flexner's (mannite non-fermenting), Vaillard's, Bruce's South African, Firth's South African, and Indian strains and were found to possess similar cultural characteristics. All the above and eight isolated by Lieutenant-Colonel Birt were found by Eckersley and him to be flagellated when deeply stained by Löffler's method. Among the 55 cases were ten infants. Shiga's bacillus was obtained from seven. Clumping reactions were not always very marked. The highest dilution noted was 1 in 600. The usual figure was 1 in 20–50. Normal human serum was without effect in a 10-fold dilution. The agglutinating power of the blood was not of long duration. The patient's blood, which reacted up to 1 in 600 on the twelfth day, agglutinated the bacillus in a 20-fold dilution only on the fortieth day. The post-mortem appearances consisted generally in great nodular infiltration of the lower part of the large bowel. The summits of the bosses became gangrenous and large excavated ulcers were formed. In about one-eighth of the cases the lower part of the ileum was invaded with a diphtheritic-like layer. Multiple suppurations of the liver were found in one-half of the bodies. In the necropsies in which a bacteriological examination was made the spleen was sterile and the liver abscesses contained the staphylococcus pyogenes aureus only. Enteric fever predisposes to dysentery. There existed either a history of that fever or lately healed or unhealed typhoid ulcers in half of the patients who succumbed. The anti-dysenteric serum prepared by Dr. J. L. Todd at the Lister Institute of Preventive Medicine was used in three cases in which Shiga's bacillus was isolated with the best results.

Captain W. S. HARRISON, R.A.M.C., read a paper on the Phagocytosis of Bacillus Typhosus. After giving a brief epitome of the work of Wright, Douglas, and others on "opsonins" and of Leishman on "stimulins," he drew attention to the fact that, contrary to what happened in the phagocytosis of staphylococci and tubercle bacilli, in dealing with typhoid bacilli the use of a heated serum in a phagocytosis mixture almost always gave a higher phagocytic index than the use of an unheated serum. This was probably due to the effect of bacteriolysis which reduced the number of bacteria available for the phagocytes to ingest. In order to obviate this effect, which might possibly mask the presence of a thermolabile opsonin, he first treated the serum with staphylococcus in order to rid it of its complement and he then compared the phagocytic activity of a serum so treated with that of one which had been heated after the saturation with cocci; he found that he got practically identical results from heated and from unheated staphylococcus-treated

[1] Langenbeck's Archiv für Klinische Chirurgie, Band xxxvii., p. 421.

serum. He concluded from this that there was no thermolabile opsonin for typhoid bacilli in either normal or immune human sera. Experiments were then undertaken to determine whether the thermostable substances in normal and in immune human sera which were concerned with the phagocytosis of typhoid bacilli acted as opsonins or not. The heated sera were saturated with bacillus typhosus for one hour at 37° C. and then centrifuged free of bacteria and a comparison was instituted between sera which had been so treated and those which had not been saturated with the organisms. It was found that with normal human serum the saturation with bacillus typhosus removed almost all of its capacity for encouraging the phagocytosis of typhoid bacteria, whereas, with immune human serum, the saturation of it with the bacilli had very little effect on its influence on phagocytosis, the readings with mixtures containing serum so treated being only slightly lower than with those mixtures which contained simple heated immune serum. He concluded that in normal human serum the chief element concerned in the phagocytosis of typhoid bacilli acted as an opsonin which differed from the opsonins for cocci and tubercle bacilli in being thermostable. On the other hand, in immune human serum the chief element concerned in the phagocytosis of typhoid bacilli was a thermostable substance also, but it did not act as an opsonin and it most probably acted by its influence on the phagocytes. He suggested that these substances in immune serum might very justly be named "stimulins," as Leishman had proposed.

Lieutenant-Colonel LEISHMAN described a method of enumerating leucocytes by which it was possible to dispense with the use of expensive apparatus, of a special diluting fluid, and of a mechanical stage. Two pipettes were required, one an ordinary one cubic centimetre pipette graduated to $\frac{1}{100}$th of a cubic centimetre; the other a capillary pipette to deliver five cubic millimetres. Both could be purchased at small cost, but the latter could be readily made and calibrated at the laboratory. Five cubic millimetres of the blood to be tested should be taken from a finger prick into the capillary pipette and at once diluted 200 times by being blown out into a watch-glass containing 995 cubic millimetres of water, previously measured by the larger pipette. Hæmolysis of the red cells occurred, but the leucocytes were unaffected. The mixture was well stirred and shaken, and by means of the capillary pipette—which had meanwhile been washed and dried in the flame—two successive volumes of five cubic millimetres each were taken and discharged side by side in the form of small drops on a clean microscope slide. The drops were allowed to dry and, if desired, the slide might be marked and set aside to be counted at leisure. The specimen was stained by Leishman's stain in the usual way when the outline of the drop would be clearly defined, while the leucocytes stood out clearly and darkly stained. The whole of the leucocytes in each drop were now counted with the help of a ruled cover-glass prepared by allowing a drop of Leishman's stain to evaporate on the well-polished surface of the glass; a thin film was left, insoluble in water or cedar oil, on which was ruled a series of parallel lines with the point of a sharp needle. A drop of cedar oil was now placed on the stained film and on to it was dropped the cover-glass, ruled surface downwards. The thin film of stain did not affect the easy recognition of the leucocytes with a $\frac{1}{3}$rd inch lens and with the help of the lines the whole of the drop was quickly and systematically searched by reading up one column and down the next; no mechanical stage was necessary. The cover-glass was then transferred to the adjacent drop which was counted in the same way. In this manner the whole of the leucocytes in 10 cubic millimetres of the diluted blood were rapidly counted and the number per cubic millimetre of undiluted blood was at once obtained by multiplying the result by 20. In dealing with leucocythæmic or leucopenic bloods the dilution was readily altered to facilitate counting. As compared with Gowers's hæmocytometer the readings given by this method appeared to under-estimate about 5 per cent., which may either be allowed for or neglected.

Lieutenant-Colonel LEISHMAN also showed specimens of Spirochætæ demonstrating the structure described by Schaudinn as an undulating membrane. The specimens were blood films which had been obtained by Lieutenant F. M. G. Tulloch, R.A.M.C., at Uganda from a monkey the blood of which was found to contain spirochætæ in considerable numbers. A description of the staining method was given and the importance of the presence of an undulating membrane as bearing upon the classification of spirochætæ was pointed out. Schaudinn had examined some films sent to him by Lieutenant-Colonel Leishman and confirmed his results as to the presence of an undulating membrane and the absence of flagella. As to the nature of the particular spirochæta it appeared possible that it was identical with the spirochæta of African tick fever, a disease which Koch considered to be the same as relapsing fever.

CLINICAL SOCIETY OF LONDON.

Exhibition of Cases.

A MEETING of this society was held on March 23rd, Mr CLINTON T. DENT, a Vice-President, being in the chair.

Dr. H. G. TURNEY exhibited a case of Bony Tumour of the Skull which had lasted over seven years. The patient had had headache for 18 months but had slept well at night. He had had three fits during the last six years and four years ago he had had right-sided infranuclear facial paralysis.—Mr. E. P. PATON recalled a somewhat similar case on which Mr. Charles Stonham had successfully operated; it was found to be an alveolar sarcoma.

Dr. BERTRAM L. ABRAHAMS exhibited a case of Sudden Paralysis of the Third Cranial Nerve which had also been exhibited at the society on Jan. 26th, the paralysis having now almost completely disappeared under mercury. Iodide of potassium alone had been unsuccessful. Dr. Abrahams also exhibited two cases of Adiposis Dolorosa in a married woman, aged 40 years, and her daughter, aged 11 years, both of whom presented adipose enlargement in various parts of the body. The daughter (who weighed 8 stones 11 pounds) complained of pains which were not definitely localised; there were no persistently tender spots and no subcutaneous thickenings.—Dr. TURNEY referred to the case of a girl, aged 15 years, who weighed 15 stones, but whose weight was reduced by thyroid extract and hot water to 10 stones. Two years later she returned, weighing 20 stones, but again the treatment was successful, though only partially. Later this patient developed pains in various places and was exhibited by Dr. Hale White at the society as a case of adiposis dolorosa.

Dr. J. J. DOUGLAS exhibited a case of Dislocation of the Metatarsus in a man, aged 24 years, a wheel having been driven over his right foot in January. On Feb. 12th an incision had been made along the inner margin of the foot. It was then found that the portion of the internal tendon of the tibialis anticus inserted into the base of the first metatarsal had got between that bone and the internal cuneiform and was seemingly the obstacle to reduction. This being pulled out and replaced the metatarsus was pushed into position with comparative ease.—Mr. C. A. R. NITCH referred to a similar case under the care of Mr. H. H. Clutton in which the patient recovered the full use of his foot.

Mr. SPENCER brought forward a woman, aged 54 years, four years after Fixation of the Omentum for Ascites. She had been in Westminster Hospital four years previously, under the care of Dr. W. Murrell, with alcoholic hypertrophic cirrhosis and ascites. After tapping and draining the ascites had returned but at a subsequent operation the omentum had been fixed to the abdominal wall in the epigastrium. The liver had been found to be enlarged and nodular. She had continued to take alcohol as before but no fluid had again collected. There was no œdema or albuminuria. Lately she had been re-admitted for removal of a fungating cancer of the left breast, involving also the axillary glands. The liver was still felt as much below the ribs as formerly.

Mr. J. G. GIBB (introduced by Dr. ABRAHAMS) exhibited a Sporadic Case of Friedreich's Disease in a boy, aged 13 years. There was no history of any nervous or mental disorder in the family. The father and mother were healthy but were first cousins. Nothing unusual was noticed till he was five years old. Then in walking he rolled from one side of the path to the other. His walk was now staggering and irregular. There was slight stamping and he turned with difficulty. The speech was slow and sometimes blurred. Romberg's sign with tendon movement was marked. Knee-, ankle-, supinator-, and biceps-jerks were absent. There was slight lateral nystagmus.—Mr. Spencer said that he could recall several cases of Friedreich's disease arising in parents who were first cousins.

Dr. ARTHUR F. VOELCKER exhibited a case of Spleno-Medullary Leukæmia (Myelæmia) in a boy, aged ten and

half years. The patient was quite well till four months ago, when he began to lose weight and became pale. The abdomen had been enlarging for two months. He had had several attacks of epistaxis lately. He was rather pale and the spleen was very large, extending down into the pelvis. The glands in the groins and axillæ were slightly enlarged. There was no tenderness about the bones. Blood report (by Dr. J. Graham Forbes): hæmoglobin, 70 per cent; colour index, 1·06; erythrocytes, 3,302,000 per cubic millimetre; leucocytes, 400,000 per cubic millimetre. Differential count: polymorphonuclear, 36·8; large mononuclear, 3·6; small lymphocytes, 9·6; large lymphocytes, 8·4; eosinophiles, 7·6; basophiles, 13·6; myelocytes: (1) finely granular eosinophilic, 14; (2) coarsely granular eosinophilic, 6; (3) basophilic, 0·4 = 20·4. In counting 500 leucocytes only one nucleated erythrocyte (normoblast) was seen.

Dr. VOELCKER also exhibited a case of Hemiplegia (? Functional) in a boy, aged ten years.

Mr. T. H. OPENSHAW exhibited: (1) A case of Congenital Absence of the Fibula and Malformation of the Head of the Femur (Congenital Coxa Vara) simulating Congenital Dislocation of the Hip in a girl, aged six years; (2) a case of Double Coxa Vara (Rachitic) in a boy, aged 12 years; and (3) a case of Traumatic Coxa Vara on the Left Side, due to extracapsular fracture of the neck of the femur in a boy, aged 12 years.

EPIDEMIOLOGICAL SOCIETY.—A meeting of this society was held on March 16th. Dr. J. F. W. Tatham, the President, being in the chair.—Dr. J. T. C. Nash read a paper on Evolution in Relation to Disease. He referred to a paper read by him in 1902 in which he had suggested that one and the same saprophyte might under different conditions be developed into the streptococcus of scarlet fever or the Klebs-Löffler bacillus with any number of variants intermediate in their morphology and in the pathological phenomena to which they gave rise. The position of Hofmann's bacillus was at present unsettled, some maintaining that it was perfectly innocuous and others that it was a modification of, and capable of reverting to, that of diphtheria. Mr. H. J. Hutchens insisted on the absence of any relation whatever between the two and the ease with which they might be distinguished. Dr Nash, however, while admitting the strong morphological dissimilarity between the typical forms of each, maintained that Hofmann's bacillus was subject to variation, and that pleo-morphism was a marked character of the Klebs-Löffler bacillus. When only short, wedge-shaped, and evenly stained forms were present it was not easy to come to a definite opinion, and these short forms often persisted in the throats of convalescents after the longer forms had disappeared. In his experience it was rare to find any form of "diphtheroid" bacillus in a throat without a history of contact or of some sore-throat, though there might have been no clinical symptoms. He believed, too, in the common ancestral origin of all these, together with streptococci. He had seen undoubted clinical diphtheria when streptococci only could be detected and swabs from the throats of successive cases in the same outbreak showed a progressive development of forms of a more diphtheroid character; while like changes occurred in a pure culture of the original streptococcus that he had set aside for further examination. Dr. M. H. Gordon had observed transformations of the streptococcus conglomeratus. Dr. E. E. Klein had suggested that the like phylogenetic relation subsisted between cocci and bacilli as between true torulæ and saccharomyces or oidium, that the bacilli were the counterparts of the latter, and that both cocci and bacilli were shown to be phylogenetic offshoots of the blastomyces by their conditional relapses into atavistic forms. These observations tended to show that the use of the word species, if implying permanency of type, as in the sense in which it was used by botanists, was wholly out of place in bacteriology. So, too, with regard to the bacillus coli and the typhoid group. Specific distinctions were as untenable here as they were in respect of the diphtheroid organisms. In India the mild and obscure attacks sometimes called paratyphoid fever furnished material of which Lieutenant Colonel R. H. Firth, R.A.M.C., and Lieutenant-Colonel D. B. Spencer, I.M.S., had availed themselves, and they left little room for doubt that the whole group from the bacillus coli communis to the bacillus typhosus were capable of becoming more or less pathogenic and of agglutinating with typhoid serum in proportion to their degree of differentiation and specialisation. He referred to the recent multiform eruptive fever, simulating measles, scarlet fever, diphtheria, cerebro-spinal meningitis, &c., reported by Dr. Gordon and Dr. R. A. Dunn caused by the streptococcus catarrhalis and suggested a common origin with divergent lines of evolution for such groups of diseases as measles, rubella, and the "fourth disease," and for variola, varicella, and so on. Dr. H. C. Bastian's remarkable researches in heterogenesis, which it seemed could not be dismissed without careful consideration, in the evolution of widely different forms of ciliated infusoria from the same germinal substance under different conditions of light and air were full of suggestion in this connexion, as were the masterly arguments of Dr. T. Thompson in showing the utter incongruity of the botanical notion of species with all that is known in bacteriology. Whether Dr. Bastian's views were accepted in their entirety or not the conclusion seemed inevitable that the doctrine of unvarying specificity must be renounced and that the transmutation of one "species" of microbe into another must be admitted, with countless intermediate and transitional forms and corresponding variants in the type of disease; the production of like pathological phenomena by more than one form of microbe, and conversely of apparently different diseases by what seem to be identical forms of microbes, all having been in the past, and being probably at the present time, evolved from simple saprophytes through the influence of altered surroundings. When the evidence was irresistible it was unworthy of scientific men to refuse belief or to persist in assuming explanations for which there was no evidence and the sole motive for which was to provide an escape from an undesirable conclusion.—Dr. J. F. Payne remarked that the doctrine of the transmutation of species was older than Darwin who had first shown how the efficient factors were conditions tending to the preservation of the individual and the perpetuation of the race. Thus tubercle bacilli sooner or later always found their way to the lungs whence they were disseminated by expectoration, those of typhoid fever, &c., by diarrhœa, and of rabies by the roaming and biting propensities of the dog.—Dr. L. C. Parkes said that much of the so-called evolution might be functional and dependent on surroundings like the metamorphoses of insects and amphibia. He thought that all were now agreed as to the origin of pathogenic bacteria in saprophytes.—Lieutenant-Colonel A. M. Davies, R.A.M.C., said that, in his opinion, the mild typhoid fever of India was due to the bacillus coli, little, if at all, differentiated. The bacillus typhosus was aerobic outside the body but anaerobic within it, and Professor Sheridan Delépine had shown that while agglutination was the best evidence of specificity the bacillus coli from water would react with typhoid serum.

CHELSEA CLINICAL SOCIETY.—The annual clinical debate of this society was held on March 13th, Dr. James Barry Ball, the President, being in the chair.—Professor R. T. Hewlett opened a discussion on Serum Therapy and said that serum treatment had been applied in microbic diseases not only in intoxications in which extracellular toxins were freely formed and were the principal factors that required to be neutralised (the antitoxic sera) but also in infections in which the toxins were mainly intracellular and the microbes themselves principally had to be attacked (the anti-microbic sera). In that connexion it was to be noted that so far diseases due to bacteria had proved to be more amenable to serum therapy than diseases due to protozoa in which up to now little progress could be chronicled in the direction of serum treatment. That treatment had been tried in conditions in which lifeless toxic agents were derived from without, notably in snake bites and hay fever. Serum treatment had been undertaken in conditions in which disordered activity or secretion of the tissues or glands of the body was the essential cause of the pathological condition, notably in the case of disorders of the thyroid gland. Serum treatment had also been applied in conditions in which abnormal proliferation of cells was the essential feature, as in malignant disease generally. The value of diphtheria antitoxin was admitted by all and perhaps the most striking testimony to that was the fall in the case mortality of the cases treated in the hospitals of the Metropolitan Asylums Board from about 29·25 per cent. in pre-antitoxin days to 10·9 per cent. at the present time. The therapeutic value of diphtheria antitoxin was

to be ascribed to a combination of factors which were not present in any disease other than diphtheria. With the exception of diphtheria and tetanus practically all other infective diseases were due to microbes which did not excrete any appreciable amount of extracellular toxin. In the case of protoplasm infection they had little evidence of the existence of any toxin, extra- or intracellular. It had to be confessed that the results obtained with the anti-microbic sera, such as the anti-streptococcic, anti-plague, and anti-pneumococcic sera, were disappointing in the extreme. Occasionally, however, antistreptococcic serum acted like a charm, but unfortunately that was the exception rather than the rule. In the case of chronic or local infections, the splendid work of Professor A. E. Wright and his co workers had proved that there were methods of attacking the disease other than by sera. In spite of the vast amount of research bestowed upon serum treatment during the last ten years the subject had not advanced much and unless immunisation by means of intracellular toxins on the lines of Macfadyen's work was successful they could not hope for much further advance in serum therapy.—Professor Wright said that serum treatment, with certain exceptions, had not been successful. He then discussed why serum treatment had been ineffective in the cases where microbic diseases were in question—as, for instance, puerperal fever and typhoid fever—but sometimes the antistreptococcic sera worked extremely well. He had spent some years in working at the subject of Malta fever and had made a serum for it and by request had sent some out to different people. He received letters back saying that the patients were made frightfully ill and "got ferocious temperatures," but later they wrote and said, "the patients have got well." He had tried the serum on himself when he had Malta fever and he had given it to his friends and to his laboratory assistant, and he knew from experience that for a day or two they were very ill. But, as a matter of fact, the vaccine stimulated the bodies of the patients to recover and to make protective substances and thus benefit was derived. In his opinion that often happened with the antistreptococcic serum. He described the treatment in a case of infective endocarditis in a girl, aged 19 years, with high fever. At first the protective power of the blood of the patient was about half the normal but after inoculation with small doses of her own microbe the fever had gone down and she now had a protective power of 2 and all the physicians in attendance considered that wonders were being done in the case in the direction of cure. The case showed that it was possible by inoculation of vaccines for the patient to produce protective substances but when the amount of labour and time involved were considered he began to feel hopeless in the matter. After spending years in a laboratory the practitioner would have to sit down by the side of his patient and to give practically his whole attention to that case, so that unless the patient was a millionaire and could afford to retain the entire services of the practitioner that method of treatment could not be generally available. In conclusion, Professor Wright said that he thought that they would improve medical work if they took sera out of the Pharmacopœia with certain exceptions.

CORK MEDICAL AND SURGICAL SOCIETY.—A meeting of this society was held on March 14th, Mr. P. G. Lee being in the chair.—Professor C. Y. Pearson showed Fibroid Tumours removed from two unmarried women, aged about 30 years. In the first case he diagnosed either ovarian tumour or a subperitoneal fibroid. The uterus was of normal size. On opening the abdomen he found a large fibroid attached to the uterus by a short pedicle two inches wide. The great size of the vessels in it and their thin walls negatived the use of the ligature, so he made two peritoneal flaps and used a continuous suture. This failing to make the stump secure, he put on a Braithwaite's clamp and stitched the stump to the parietal peritoneum in order to prevent dangerous adhesions. He left the clamp on for six hours. Recovery was uneventful. The tumour was of the kind described by the late Lawson Tait as "œdematous." In the second case there were three tumours. The largest, of about the size of an orange, lay over Poupart's ligament and simulated a hernia. It was attached to the right cornu of the uterus and was easily removed. The second, on the anterior wall behind the bladder, had to be enucleated, whilst the third, on the posterior wall, had a very short sessile pedicle. Recovery was uneventful. As a rule, Professor Pearson was averse from the operation of myomectomy, preferring hysterectomy in such cases, but he was reluctant to deprive these women of their uteri so early in their sexual life.—Professor H. Corby agreed that the major operation was the more satisfactory, as a rule, but thought it only fair to choose the minor in these particular cases.—Dr. P. T. O'Sullivan read notes of a case of Chronic Diarrhœa simulating Sprue. The patient was a woman, aged 30 years, a quartipara, who had suffered from chronic diarrhœa for two years. She was thin, sallow, and worn, with very depressed expression. The diarrhœa was principally in the morning; there was no pain but a great deal of discomfort. The motions were always large and numbered from four to eight in 24 hours. The following was her condition on examination. The teeth were good; the lips were excoriated and pallid; the tongue was small, dry, and glazed; it was split by fissures and was covered with small plaques. Anything acid or salt gave rise to considerable smarting. Her appetite was fair and she did not suffer from thirst. She complained occasionally of distress after food, particularly vegetables. The motions were large, white, and not very offensive, alkaline in reaction, exceedingly bulky, and out of proportion to the food ingested. Under the microscope they showed no special features. The urine was normal, and although examined several times chemically and microscopically nothing abnormal was detected, except that the excretion of urea was markedly reduced, the percentage being 0·47. The lungs were normal; the cardiac first sound was feeble and there was accentuation of the second sound by contrast. Examination of the blood revealed marked diminution in hæmoglobin but no other change in the cellular elements. On examining the abdominal viscera Dr. O'Sullivan could not find the liver at first but eventually a strip of dulness, two inches long, at about the level of the nipple was elicited, and palpation of the very flaccid abdomen revealed a hard band running up to the diaphragm. This condition gave the key to the disease. It was evident that the diarrhœa was due to the absence (1) of bile; and (2) of the other functions of the liver. The patient was put on a rigid diet, getting her food practically dry and very little fluid and that sterilised milk. Beta-naphthol in petroleum emulsion had no effect. Fat globules were subsequently detected in the fæces and the patient was accordingly put entirely on Benger's liquor pancreaticus and in three or four days she had the first formed motion for two years. The size and number of the motions diminished and after ten days bile appeared in the fæces. Dr. O'Sullivan said that the case illustrated the interdependence of the functions of the liver and the pancreas. His reasons for liking the condition to sprue were (1) morning diarrhœa; (2) the quantity; (3) the condition of the mouth and tongue, &c.; and (4) the diminution of the liver. Sprue had never been known in this country except in imported cases.

SOCIETY FOR THE STUDY OF DISEASE IN CHILDREN.—A meeting of this society was held on March 16th, Dr. G. A. Sutherland being in the chair.—Dr. G. E. C. Pritchard exhibited a case of Symmetrical Dimpling of the Skin on the Dorsal Aspect of the Extremities of both Acromial Processes in a girl aged eight years. The condition was noticed at birth.—Dr. Kenneth R. Hay exhibited a case of Achondroplasia in a boy, aged two years. Dr. Hay said that the patient might be considered to be a typical example of the condition called achondroplasia. He was the elder of two children. The younger was aged four months and was to all appearances normally shaped. The head was decidedly large and the frontal bones were prominent. The root of the nose was depressed. The anterior fontanelle was open. The circumference measured 20½ inches. The body was long relatively to the limbs and the chest was rather narrowed. There was slight beading of the costo-chondral joints of the ribs. The heart and the lungs were normal and the sexual organs were well developed. The limbs were shortened in a characteristic manner. The hands and fingers were dumpy. The humerus and ulna each measured three and three-quarter inches. The femur measured four and three-quarter inches and the tibia five inches. The bones felt thick and hard and were not apparently curved.—Mr. Hugh Lett exhibited: (1) A case of Erb's Paralysis in a child, aged four and a half months, involving the fifth, sixth, and seventh cervical nerves; and (2) a case of Precocious Development in a boy, aged four years. The boy had been rather backward until he was two years old the

pubic hair then appeared, and development took place with extreme rapidity. There was a remarkable growth of hair all over the body, especially over the pubes and in the lumbar region. The penis and testicles were large and resembled those of a young adult. His voice was deep and like a bass voice not yet under full control. His muscular development was remarkable, especially in the thighs, and he was possessed of proportionately great physical strength.—Dr. F. J. Poynton exhibited a case of Acne Scrophulosorum in a child aged five and a half years.—Mr. Sydney Stephenson showed a case of Congenital Coloboma of the Eyelid.—Mr. H. S. Clogg exhibited a case of Congenital Deformity of the Hands in a child aged four months.—Mr. Douglas Drew exhibited a case of a Congenital Unilocular Cyst of the Neck.—Dr W. Ewart exhibited drawings done by a child recovering from Chorea and read a short paper on the Treatment of Chorea by Strychnine.—Dr. Edmund Cautley showed a specimen of Congenital Hypertrophic Stenosis of the Pylorus removed from a child aged nine weeks, one of twins born somewhat prematurely. Symptoms began at three weeks of age. The child came under treatment a week before death weighing three pounds seven ounces. The vomiting was by no means marked. A normal stool was passed a few days before death. The case illustrated moderate pyloric hypertrophy which had not produced complete obstruction and there was nothing in the history suggestive of spasm.—Dr. C. O. Hawthorne read notes on a Tumour of the Pons Varolii in a Boy, aged eight years. The most noticeable symptoms were a constant series of jerks and spasms mainly affecting the trunk, extreme retraction of the head without rigidity, optic neuritis, and well-marked knee-jerks. Dr. Hawthorne also read notes on Specimens from a case of Small White Kidney from a girl, aged 12 years. The microscopic changes were those of chronic interstitial nephritis.

NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on March 21st, Mr. T. J. Dabell, the President, being in the chair.—Dr. F. H. Jacob showed a boy, aged 12 years, the subject of Lupus Vulgaris over the Left Eye, apparently dating from a blow.—Dr. Jacob also read notes of three cases of Severe Acne and one of Chronic Eczema cured by the X Rays. In the worst case of acne indurata the formation of the deep, indurated lumps was distinctly diminished after every other remedy, including Wright's staphylococcus serum, had entirely failed. In the second case ten applications had removed the disease. In the third very marked improvement had occurred after five applications. The case of eczema was that of a child, aged ten years, in which all other treatment had been quite unsuccessful. The rash was composed of flat, lichenoid papules and covered the whole back; it entirely disappeared after a single application of the rays.—Dr. Jacob, in answer to Dr. J. S. Bolton, explained that the x rays were never used upon the face sufficiently strong to cause epilation.—Mr. J. Mackie read a paper on the Influence of Nasal Diseases on the Lower Respiratory Tract. After defining the scope of the subject as dealing with lymphoid hyperplasia, nasal fluxes, septal spurs, deformities and turbinal overgrowths, polypi and sinus disease Mr. Mackie pointed out the natural results of family and hereditary tendencies to catarrh. In a typical case of adenoids, for example, if allowed to drift, not only was respiration obstructed and the naso-pharyngeal mucosa constantly in a state of engorgement and bathed in catarrhal secretion, but reflex symptoms frequently arose. Adenoids were frequently responsible for spasmodic cough and bronchial catarrh. Thus the first influences of nasal disease on the lower respiratory tract were reflex and not infective. Hay fever, paroxysmal sneezing, and asthma were common in simple but rare in suppurative catarrh. The relation between asthma and intranasal disease was now established and as a matter of experience suppurative sinus disease did occur in children. Where cough and sputum occurred the sputum might be identical with the nasal discharge. It was not surprising that such cases were frequently suspected of being early pulmonary tuberculosis, especially if the breath sounds seemed faulty, for the septic absorption might cause night sweats and pyrexia and the sputum be blood-stained. The latter should be closely scrutinised and the blood would generally be found intimately incorporated with the mucus. At first Mr. Mackie had had considerable suspicion that such cases were liable to lead up to pulmonary tuberculosis but no actual proof of such an ending had ever come under his notice, and, on the other hand, similar cases had recovered completely where the nasal condition had been successfully treated.—The President alluded to the importance in general practice of recognising the class of case which had been alluded to.—Dr. W. B. Ransom confirmed the difficulty of diagnosis in many cases where early pulmonary tuberculosis was suspected. He made a routine examination of the nose, the naso-pharynx, and the larynx in all such cases.—Dr. Jacob, Mr. W. Morley Willis, Mr. A. R. Tweedie, Dr. Bolton, and Dr. T. F. Wilson discussed the paper.—Mr. Mackie replied.

HUNTERIAN SOCIETY.—A clinical meeting of this society was held at Guy's Hospital on March 14th, Dr. F. J. Smith, the President, being in the chair.—Dr. Frederick Taylor showed a case of Spastic Diplegia in a child aged two and three quarter years. The legs had been weak and more or less rigid since the age of nine months, when fits occurred. There was obvious defect of mental development; the legs were spastic, adducted, and crossed, but the muscles were not wasted. The arms were weak, moving jerkily. The lesion was probably cortical and perhaps congenital. Dr. Taylor also showed a case of Muscular Atrophy in a man, aged 38 years; the condition began to come on when he was about 25 years of age. The muscles of the gluteal region and the thigh, especially the adductors, were much wasted, while those of the legs, trunk, and arms appeared to be normal. On rising from the recumbent position the patient "climbed up himself." An elder brother was stated to have been similarly affected.—Dr. Newton Pitt showed a woman, aged 44 years, with Syringomyelia, which commenced insidiously about 20 years ago with weakness in the left arm and subsequently cramp and numbness in the left leg. Loss of power in the left shoulder appeared 12 months ago. There was no pain. The left hand was claw-shaped. The sensation of heat and cold was impaired.—Dr. H. S. French (for Dr. W. Hale White) showed a woman, aged 23 years, with Myasthenia Gravis of four months' duration. The external recti and levatores palpebrarum muscles very soon became tired and ceased to act and speech became mumbling. She swallowed with difficulty. Dr. French also showed a woman, aged 45 years, suffering from Spleno-medullary Leukæmia. Under x ray treatment the white corpuscles fell from 400,000 per cubic millimetre to 17,000.—Dr. Walker showed (for Dr. A. P. Beddard) a case of Pseudo-leukæmia in a child, aged three years. The spleen was enlarged nearly to Poupart's ligament and there was slight enlargement of some lymphatic glands. The blood contained per cubic millimetre 2,000,000 red cells and 7500 white cells and myelocytes from 5 to 14 per cent.—Mr. Clement Lucas showed a case of Carcinoma Mammæ.—Mr. Arbuthnot Lane sent a case of Multiple Arthritis in a child, aged about three years. The symptoms closely corresponded with those of Still's disease. There was considerable glandular enlargement.—Mr. R. P. Rowlands showed a young woman in whom Sarcoma of the Tibia had been diagnosed. It appeared to be a case of spontaneous fracture of the tibia and fibula dating two years back. No treatment was applied and œdema had been present ever since.—Mr. Arthur W. Ormond showed a case of Essential Shrinking of the Conjunctiva in a youth, aged 17 years. The condition dated back four and a half years. Vision was very defective, especially on the right side; on the left side it was $\frac{6}{9}$ with + 5 D. sph. The cornea of the right eye was invaded by thickened conjunctiva, there was scarring under the upper lid, and the left eye was similarly but less affected.

DERMATOLOGICAL SOCIETY OF LONDON.—A meeting of this society was held on March 14th, Dr. J. Herbert Stowers being in the chair.—Dr. James Galloway showed a Case for Diagnosis. The patient was a man, aged 47 years, who had had the disease for from three to four years. When shown he had circinate patches of red scaly dermatitis, varying in size from an inch to three or more inches in diameter and distributed chiefly upon the trunk. These were not deeply infiltrated and hardly at all itchy. The patient was otherwise in robust health and had remained so for the whole time of his eruption. Some of the patches had improved with treatment.—Dr. H. Radcliffe Crocker considered the case to be probably an instance of the disease which he had named "xantho-erythrodermia perstans." Other suggestions were that it was a case of the premycosic stage of mycosis fungoides.—Dr. T. Colcott Fox showed: 1. A case of Lichen Planus with typical lesions of that disease on the mucous membrane of the mouth and

with a few small groups of papules, acuminate in type and arranged like those of lichen spinulosus. There were no flat papules such as are more commonly seen in lichen planus and Dr. Fox showed the case as an instance of a rare form of lichen planus of Wilson which might easily escape recognition. 2. A case of a Papulo-nodular Tuberculide, distributed on the legs of a woman, aged 22 years. Some of the lesions showed a central crateriform necrosis. The patient had in addition an old lupus vulgaris of the nose which had been cured by x rays.—Mr. Gerald T. S. Sichel showed (for Sir Cooper Perry): 1. A case of Acute Lupus Erythematosus of the Face and Hands in a woman, aged 22 years, in whom the disease had commenced two and a half months previously and had spread thus rapidly in that short time. There were no lesions of the mouth. 2. A case of an Itchy Papulo-nodular Eruption which had persisted since the age of 13 years, the patient being now 24 years of age. Sir Cooper Perry had suggested the diagnosis of "itching keloid." The eruption was distributed on the arms, the legs, and the back of the trunk.—Dr. Crocker thought it was more probably a case of urticaria perstans, an opinion in which several members agreed.—Mr. Sichel also showed Two Children with Curious Fibrous Tumours on the Digits. In the younger child these were at the extremities of the distal phalanges of the left hand and were congenital. They were perfectly painless and did not involute at all. A section had been obtained and showed their fibrous character. In the older child, who had been shown previously, the tumours occupied the shafts of the phalanges of the left hand and were larger, flatter tumours. These had appeared at the age of eight months.—In this case some members were of the opinion that the tumours resembled the lesions of erythema elevatum diutinum in the cases recorded some years ago by Dr. Crocker under that title.

GLASGOW PATHOLOGICAL AND CLINICAL SOCIETY.—A meeting of this society was held on March 12th, Professor Robert Muir, the President, being in the chair.—Dr. James A. Adams showed a man, aged 28 years, from whom he had removed a Supernumerary Lobe of the Liver. The patient had suffered intermittently for some years from pain in the region of the stomach with attacks of vomiting and on three or four occasions hæmatemesis and latterly he had well-marked symptoms of pyloric obstruction. At the operation a pedunculated accessory lobe of the liver arising from its under surface to the left of the gall-bladder was found which pressed on the pylorus and to the presence of which the symptoms were attributed. The lobe was removed and the patient made an excellent recovery from the operation and the symptoms from which he suffered had greatly improved.—Dr. James Finlayson gave a short account of a well-marked case of Addison's disease and the President described the conditions met with at the necropsy and showed specimens from the case.—Dr. A. N. McGregor read a preliminary note on a Rational Operation for the Radical Cure of Inguinal Hernia. The operation did not involve the separation of the layers of the areolar tissue covering the fasciæ and thus preserved better the blood supply and allowed of a quicker recovery.—Dr. John W. Findlay read notes of two cases of Chronic Lymphatic Leukæmia which presented similar characters as regards duration of the disease, general enlargement of the lymphatic glands, enlargement of the spleen, and the occurrence of a medium-sized lymphocyte in the blood and in the cellular proliferations in the organs.

PATHOLOGICAL SOCIETY OF MANCHESTER.—A meeting of this society was held on March 14th.—Mr. Arthur H. Burgess exhibited and described two specimens of the Bladder and Urethra obtained from patients upon whom the operation of suprapubic prostatectomy had been performed two years and nine months before death from bronchopneumonia in one case and nine months before death from dilated heart in the second case. The specimen removed at the operation was also shown in each instance. The cavity left after enucleation of the enlarged gland had very considerably contracted but was still evident as a distinct cavity at the base of the bladder, smoothly lined with mucous membrane, communicating above with the bladder by an opening with a well-defined posterior margin and below with the membranous urethra. In neither case was there any evidence of a tendency towards stricture.—Dr. O. C. Gruner read a communication on Cryoscopy and Electro-conductivity in Medicine. The association of the two methods of examination with quantitative estimation of the chlorides present was illustrated in two specimens of urine in diabetes. The question of the determination of the adequacy of the kidney from an examination of the blood or urine, or both, was gone into at some length but more hopeful results were found to obtain in the case of examination of segregated urine in order to determine the existence of unilateral renal disease. Charts were also shown giving daily observations during the course of a case of pneumonia and of a fatal case of carcinoma of the liver.

LARYNGOLOGICAL SOCIETY OF LONDON.—A meeting of this society was held on March 2nd, Dr. P. Watson Williams, one of the Vice-Presidents, in the absence of the President, being in the chair.—Mr. H. S. Barwell showed two cases of Tuberculous Laryngitis which had benefited by local active measures and sanatorium treatment.—Dr. H. J. Davis exhibited a case of Atrophic Rhinitis.—Dr. J. Walker Downie showed recent photographs of some cases in which Paraffin had been employed in the treatment of Nasal Deformity, as well as others taken immediately after treatment four years ago.—In the discussion which followed there was a consensus of opinion that with such good results from the use of paraffin for overcoming definite nasal deformity the theoretical objections recently put forward by a German medical man, and quoted by Sir Felix Semon at the previous meeting, need not be taken too seriously.—Dr. A. Brown Kelly exhibited a sketch of a Larynx and the microscopic section of the Uvula from a case of Hyperplastic Congenital Syphilis.—Mr. H. Betham Robinson showed a case of Fibro-angeioma of the Nasal Septum, and Dr. H. Smurthwaite exhibited again, for further diagnosis, a patient previously shown to the society in June, 1905. Several opinions were expressed at that time in favour of malignant disease of the larynx. The improvement which had taken place in the interval and without operative measures had negatived the opinions previously expressed.—Cases were also shown by Dr. L. H. Pegler, Dr. E. B. Waggett, Dr. E. Furniss Potter, and Mr. P. R. W. de Santi.

BRADFORD MEDICO-CHIRURGICAL SOCIETY AND BRADFORD DIVISION OF THE BRITISH MEDICAL ASSOCIATION.—A conjoint general meeting of these societies was held in the Board Room of the Royal Infirmary, Bradford, on March 20th, Mr. W. Handcock being in the chair.—The following specimens were shown and discussed. Dr. C. F. M. Althorp: (1) Tongue excised by Kocher's Method; (2) Cancer of the Rectum removed through the Vagina; (3) Cutaneous Anthrax; (4) Tumour of the Testicle; and (5) Growth from the Cheek.—Dr. A. Bronner: (1) Some Rhinoliths; (2) Large Naso-pharyngeal Polypi; (3) Crust from the Naso-pharynx in a case of Dry Catarrh; (4) Contents of a Cholesteatoma of the Ear; and (5) Angioma of the Right Nostril.—Dr. W. E. Heilborn: (1) Hearts from Cases of Pericarditis; and (2) Intestine and Lungs from a Case of General Tuberculosis.—Mr. J. Basil Hall: (1) Carcinoma of the Rectum (Kraske's Operation); (2) Carcinoma Corporis Uteri (Abdominal Hysterectomy); (3) Gangrenous Intestine (Enterectomy); and (4) Renal Calculi.—Dr. T. Jason Wood: (1) Renal and Vesical Calculi; (2) Specimens of Tuberculous Testicles; and (3) Fœtus from an Abdominal Gestation.—Dr. W. Mitchell: Some Anthrax Slides.

NEW HOSPITAL FOR BODMIN.—A special meeting of the subscribers to the East Cornwall Hospital at Bodmin was held on March 23rd to consider the advisability of building a new hospital. Dr. C. A. West presided. It was explained that the present building was quite obsolete and after some discussion it was determined to erect a new structure. A committee was appointed to consider all necessary details and to report to a future meeting of the subscribers.

KING'S COLLEGE.—The council of King's College has accepted the resignation by Professor T. C. Hayes of the chair of Obstetric Medicine and Diseases of Women and Children, and has appointed Dr. John Phillips as Professor of Obstetric Medicine and Diseases of Women and Dr. G. F. Still as Professor of Diseases of Children at King's College Hospital. The council has also appointed Dr. W. E. Dixon of Downing College, Cambridge, to the chair of Materia Medica and Pharmacology and has elected Dr. Frank E. Taylor as Demonstrator of Bacteriology.—Dr. A. C. Headlam, Principal of King's College, was appointed to represent the College at the celebration of the fourth centenary of the University of Aberdeen.

Reviews and Notices of Books.

Clinical Applied Anatomy, or the Anatomy of Medicine and Surgery. By CHARLES R. BOX, M.D., B.S., B.Sc. Lond., M.R.C.P. Lond., F.R.C.S. Eng., Physician to Out-patients, St. Thomas's Hospital, and Assistant Physician to the London Fever Hospital, Lecturer on Applied Anatomy and Demonstrator of Morbid Anatomy, St. Thomas's Hospital; and W. MCADAM ECCLES, M.S. Lond., F.R.C.S. Eng., Assistant Surgeon, Joint Lecturer on Anatomy, and Demonstrator of Operative Surgery, St. Bartholomew's Hospital, Examiner in Anatomy for the Fellowship of the Royal College of Surgeons of England, and Examiner in Surgery for the Society of Apothecaries. Illustrated by 45 plates, of which 12 are coloured, and six figures in the text. London: J. and A. Churchill. 1905. Pp. 471. Price 12*s.* 6*d.* net.

WE are told by the authors in the preface that the work before us "deals with the purely clinical side of applied anatomy and is written from the practitioner's rather than an anatomist's point of view." We concur in the advisability of carefully keeping in view in such works as this that the subject is applied anatomy and not pure anatomy. We think that a large measure of success has attended this first edition and the book should prove of very definite value to senior students. The arrangement is according to diseases and not according to the various regions of the body. We cannot quite acquiesce in this, though there are, no doubt, reasons for it. The authors have considered it necessary to introduce accounts of inflammation, pyæmia, actinomycosis, syphilis, and similar subjects which would have been more in place in a work on pathology but the descriptions are good though brief. The portions of the book which appear to us the most valuable are that dealing with the brain and that devoted to the abdomen. The work is illustrated with a large number of drawings, many of which are coloured. Some of the illustrations have been borrowed and much judgment has been shown in the selection; for those for which the authors are responsible we have nothing but praise. As a second edition will probably be required before long we think it well to point out a few blemishes which may be removed.

The diction is occasionally infelicitous; for instance, we have the modern misuse of the word "same"; "Intermittent pressure ..... will lead first of all to the formation of an adventitious bursa or bunion and often subsequently to inflammation of the same." Again, what is meant by the following? "Lesions at the origin of the aorta or in the aorta itself are much less common than the corresponding lesions of the pulmonary artery. Like the latter lesions, they may involve the conus arteriosus of the left ventricle, the orifice of the aorta, or the aorta trunk." It is certainly somewhat strange to learn that lesions of the pulmonary artery may involve the conus arteriosus of the left ventricle or the aorta. It may be said that the authors' meaning may be readily guessed, but in works for students the meaning should be clear and obvious. Once more, what would the average student make of the following? "The spot at which the vermiform appendix springs from the inner and back part of the cæcum may be indicated with sufficient accuracy by taking a point one inch below the intersection of the right Poupart and the intertubercular planes." To those who know the meaning may be clear but we fear that the sentence would convey nothing to the mind of the average student. By-the-bye, the intersection of two planes must be a line and there is an infinite number of points "one inch below the intersection" of these planes. It may be said that these matters are of little importance and certainly the merits of the book tend to overshadow them, but clearness is essential in any work intended for students and we hope that in the second edition these blemishes to which we have taken exception will not appear. The index might easily be fuller.

Last Words on Evolution: a Popular Retrospect and Summary By ERNST HAECKEL. Translated from the second German edition by JOSEPH MCCABE. With Portrait and Three Plates. London: A Owen and Co. 1906. Pp. 127. Price 6*s.*

WHATEVER opinions may be held of Professor Haeckel as a philosopher we imagine that there are no two opinions about him as a biologist. We very much doubt, however, whether the triad of lectures which have recently been published under the title of "Last Words on Evolution," and which have been most excellently translated for the benefit of English readers by Mr. Joseph McCabe, will enhance his reputation either in the one or in the other direction. On the scientific side we cannot admit that evolution finds any new support in what the veteran biologist has to say in these three lectures; what is said in them has been said better before and by Professor Haeckel himself. Neither can we admit that this is the time or the occasion for stirring up the smouldering animosity of that small section of thinking society to whom the acceptance of the theory of evolution appears to imply the unconditional surrender of its more cherished dogmas.

Professor Haeckel appears to detect danger for freedom of thought in Germany "in the growing audacity of intolerant orthodoxy, in the preponderance of Ultramontanism, and in the increasing reaction in higher circles," and in view of this danger, whether real or apparent, he has felt it imperative to take "vigorous action." No one for a moment will question the "*vigour*" of his assault but many, we fear, will count the undoubted victory achieved for science and truth as dearly purchased when they come to reckon up the loss in personal dignity sustained by the aged champion himself and the aftermath of acrimony which chastisements of this nature are wont to provoke. In justification of the polemical character of his diatribes against the dogmas of the churches in general and of those of the Jesuits in particular Professor Haeckel exhorts his hearers to remember that "conflict is the father of all things and that the victory of pure reason over current superstition will not be achieved without a struggle; in my struggle I regard ideas only, to the persons of my opponents I am indifferent, bitterly as they have attacked and slandered my own person."

In his "History of Creation," in "The Evolution of Man," in "The Riddle of the Universe," and in "The Wonders of Life" Professor Haeckel has established more convincingly than any other living biologist the monophyletic or single origin of the whole animal series. In the lectures before us he restates his argument, though in simpler and less technical language. He controverts most forcibly the statement that the gap between man and the anthropoid ape has not yet been filled up, that, in fact, the missing link has not yet been found; "the morphological chain," he adds, "that stretches from the lemurs to the earlier Western apes, from these to the Eastern tailed apes, and to the tailless anthropoid apes, and from these direct to man is now uninterrupted and clear; it would be more plausible to speak of missing links between the earliest lemurs and their marsupial ancestors, or between the latter and their monotreme ancestors." He insists strongly that the issue must not be obscured by the fact that there is no morphological evidence to show that man has descended from any living variety of ape; no competent man of science has ever suggested anything so foolish, but he considers it necessary to emphasise their common origin from a single

hypothetical root-form to which he has given the name "archiprimus." He has thought it necessary to insist on this point because "certain dangerous attempts have been made by Jesuitical zoologists and zoological Jesuits to cause fresh confusion in the matter" by denouncing, on the ground of want of morphological identity, the possibility of man's descent from any living ape form. "All these attempts have a common object—to save man's privileged position in nature, to widen as much as possible the gulf between him and the rest of the mammals, and to conceal his real origin. It is the familiar tendency of the '*parvenu*' which we so often notice in the aristocratic sons of energetic men who have won a high position by their own exertions. This sort of vanity is acceptable enough to the ruling powers and the churches because it tends to support their own fossilised pretensions to a 'divine image' in man and a special 'divine grace' in princes."

This is the temper in which Professor Haeckel, a man of the most liberal views, attacks the threatening, or what he believes to be the threatening, situation of politics in Germany. As a man of logic and of facts he fears for the future of a nation whose sons are now being educated to direct their actions in obedience to a morality which, according to his own materialistic interpretation, is false in every particular. These "Last Words on Evolution" deserve a hearing if for their eloquence alone, and they represent the material facts in the realm of morphology on which the general principles of evolution are based in a manner which admits of little improvement; in their philosophic aspects they will not bear close examination; and as polemics against the cherished and reverenced beliefs of the churches we do not think we speak too strongly if we apply to them the term indecent.

LIBRARY TABLE.

Genito-Urinary Surgery and Venereal Diseases. By J. WILLIAM WHITE, M.D., Professor of Surgery, University of Pennsylvania; and EDWARD MARTIN, M.D., Professor of Clinical Surgery, University of Pennsylvania. Sixth edition. London and Philadelphia: J. B. Lippincott Company. Pp. 1092. Price 21*s.* net.—This issue, the sixth edition of "Genito-Urinary Surgery and Venereal Diseases," has been revised in accordance with the latest teaching of those most skilled in this branch of surgery. Adopting quite the opposite policy to that carried out in the fifth edition the authors have closely studied current literature and have from it made a selection of facts and procedures which they consider to have proved worthy of general acceptance. The authors have endeavoured to embody in this text-book the improvements made during the last two years in the technique of the genito-urinary specialist. In connexion with the remarks which have been published recently in THE LANCET with regard to varicocele and admission to the naval and military services the section of this work devoted to that condition is interesting reading. The authors think that the results of the radical operation are usually satisfactory and that it is an exception when any atrophy of the testicle follows ligation of the veins of the cord. In the treatment of syphilis by administration of mercury by the mouth the authors think that the best method of administering opium is in the form of compound tincture of camphor. With each mercurial pill the patient is directed to take the smallest number of drops which will prevent griping diarrhœa; thus the minimum efficient quantity of opium which will prevent the mercury running off by the bowel can be found and it is administered in a form towards which the stomach is fairly tolerant. The section on prostatic hypertrophy has been rewritten. Chapter XV., which deals with renal calculi, appears to the reviewer to be a specially able one. The steps of even the smaller operations are so fully described that the book will be a real service to the practitioner. The book is illustrated with 300 engravings and 14 excellent coloured plates; many of the illustrations are new; those which explain the passage of instruments in stricture of the urethra are particularly good and instructive. The authors have improved the book without adding to its size and the teaching is clear, direct, and practical. The subject matter is well arranged, the text is clear in meaning, and the amount of space which is devoted to treatment renders the book specially valuable.

Sanatoria for Consumptives: A Critical and Detailed Description, together with an Exposition of the Open-air or Hygienic Treatment of Phthisis. By F. RUFENACHT WALTERS, M.D. Lond., M.R.C.P. Lond., F.R.C.S. Eng.; late Physician to the Mount Vernon Hospital for Consumption and Diseases of the Chest. Third edition. London: Swan Sonnenschein and Co. 1905. Pp. 389. Price 12*s.* 6*d.*—This work has reached a third edition in a comparatively short time, a fact which sufficiently proves that its merits have been duly appreciated. As is generally known, the book is intended as an unofficial directory of existing sanatoriums for consumptives, brief reference being made to all but the smallest, and as far as possible a more detailed description being given of the more important. An epitome of the principles on which sanatorium treatment is founded is also provided. Since the publication of the first edition of this book in 1899 a great change has taken place in public opinion as to the utility of this method of treatment. On the whole, a more hopeful feeling exists as to the curability of pulmonary tuberculosis in favourable circumstances. It is now generally recognised that rational hygienic and medicinal treatment, which gives by far the best prospect of recovery, is, in regard to the great majority of patients, most conveniently carried out in a special institution in a suitable neighbourhood under the immediate personal control of the physician. Owing to the large number of such sanatoriums which have been erected during the last few years Dr. Walters has naturally found it a matter of extreme difficulty to obtain complete and trustworthy information with regard to all of them. He has succeeded, nevertheless, in collecting descriptions of a great many and the amount of information contained in this volume is immense. The work is admirably arranged and has a good index, so that reference to its pages is easily accomplished. Descriptions will be found of all the principal sanatoriums, private and public, which have been built since the last edition was published or are in course of construction. The numerous illustrations scattered throughout the volume considerably add to its interest and value. Many of these are reproductions of photographs or copies of plans; the main features of each sanatorium can thus be seen at a glance. In conclusion, we congratulate Dr. Walters on the success of his labours and once again we can with pleasure recommend the work to the notice of our readers.

The Cathedrals of England and Wales. By T. FRANCIS BUMPUS. Second series. London: T. Werner Laurie. 1906. Pp. 300. Price 6*s.* net.—In this, the second volume of the series, the author very properly starts with the metropolitan church of Canterbury, the historical events in connexion with which are dealt with in the course of his luminous architectural description of the famous shrine. He does not, however, confine himself merely to architectural details in the case of this or any of the other cathedrals treated of in the course of the volume; he unearths the smallest matters that he thinks will be interesting or instructive. Thus in writing of the great English composer, Orlando Gibbons, whose bust is in the north aisle, he says that the Latin inscription has been somewhat freely translated by Dart in his "Canterbury." The translator rendered the sentence

"Ictu sanguine crudo" as "He died of small-pox" and it was never called into question until a recent discovery was made in the Record Office of the medical certificate of his death which stated that he was attacked by lethargy, passing into convulsions. "Then he grew apoplectic and so died." This instance will give an idea of the painstaking manner in which the author has gone about his work. Similar care is bestowed on St. Paul's, London, that other great church which is so often erroneously styled "metropolitan." Mr. Bumpus treats of St. Paul's at great length, but not at too great length, for the "vast cathedral," as Tennyson called it, should be full of interest by reason of its patriotic associations, irrespectively of its architectural merits, to every Englishman. The unrivalled collection of stained glass in York Minster affords the author an opportunity of giving us some illuminating criticism on that form of vitreous decoration generally, and *inter alia* we necessarily find some more English history, for York has had its full share in the making thereof. In the article on Winchester he pays a well-merited tribute to the genius of its famous organist and composer, Dr. S. S. Wesley. Norwich, with its carefully preserved painting of the latter part of the fourteenth century which, Mr. Bumpus insists, is another specimen of the beauty of ancient English art, is also fully described. The remaining articles are on Peterborough, Exeter, and Wells, and these are dealt with as carefully as the others. The plates with which the book is enriched are very helpful in elucidating the architectural descriptions, which, however, are never dry or "guide-booky," and the volume generally, like its predecessor, should prove a delightful companion alike to those who have the privilege of visiting the fanes and to those who have perforce to be satisfied with reading about these artistic glories of England.

JOURNALS AND MAGAZINES.

The Journal of Physiology. Edited by Sir MICHAEL FOSTER, K.C.B., F.R.S., and J. N. LANGLEY, Sc.D., F.R.S. Vol. XXXIV. Nos. 1 and 2. London: Cambridge University Press Warehouse. March 13th, 1906. Pp. 162. Price 10s.—The contents of this number are: 1. Observations on the Scratch Reflex in the Spinal Dog, by C. S. Sherrington, with 27 figures in the text. This is dealt with in an annotation at p. 920 of our present issue. 2. On the Conducted Disturbance in Muscle, by Keith Lucas, with four figures in the text. The author remarks that from previous researches it appears that from any directly stimulated point on a muscular fibre there is conducted over the length of the fibre a disturbance which is not itself the change of form but which calls up the change of form. He has employed a method of reversal to determine whether any change takes place in the intensity of the conducted disturbance. The method of reversal assumes that the change of form produced at any point on a muscular fibre by any conducted disturbance is independent of the direction in which that disturbance is travelling. Application of this method to the curarised sartorius of the frog shows that in fresh muscle the disturbance produces, after conduction over a distance of about 30 millimetres of the muscle's length, a contraction which is usually more than 95 per cent. of the contraction which it produced under otherwise identical conditions before conduction over that distance. This small difference may be due to some fibres failing to reach from end to end of the muscle. It cannot therefore be asserted that in fresh muscle the disturbance undergoes any change of intensity in the normal course of conduction. The records obtained prove that the conducted disturbance may undergo, at any rate in muscle fatigued by tetanisation, a change of intensity in the course of conduction. Intracellular Colloidal Salts, by W. A. Osborne, from the physiological laboratory, University of Melbourne. 4. On the Alleged Adaptation of the Pancreas to Lactose, by R. H. Aders Plimmer, D.Sc. Dr. Plimmer urges in opposition to some previous experimenters that in no circumstances is there any adaptation of the activity of the pancreas to the presence of lactose in the food. He therefore accepts Popielski's view that the composition and the amount of the pancreatic secretion are determined solely by the intensity and the duration of the stimulus (or, as we should now express it, the amount of secretin produced in a unit of time and the duration of its inflow into the blood). 5. On the Preparation of Cholesterin from Brain, by Otto Rosenheim, Ph.D. The method employed by Dr. Rosenheim is to mince the brain of the sheep and then to mix it intimately with some sand and about three times its weight of plaster-of-Paris. The mass when set is coarsely powdered and treated repeatedly at room temperature with acetone, from which the cholesterin crystallises out in snow-white crystals. 6. The Cholesterin of the Brain, by M. Christine Tebb. Miss Tebb shows that cholesterin occurs as such in the brain, thus being in opposition to the statement of Baumstark. 7. Observations on Diet, the Influence of Diet on Growth and Nutrition, by D. Chalmers Watson, M.D. Edin., with an Appendix showing the Composition of the Several Diets, by Andrew Hunter, M.B., B.Sc. Edin., with two figures and 16 charts in the text. The observations were made upon rats and the several diets to which they were subjected were rice, porridge, horse-flesh, ox-flesh, bread, and milk. 8. The Chemical Mechanism of Gastric Secretion, by J. S. Edkins, with one figure in the text. Mr. Edkins shows that extracts made of the pyloric mucous membrane in boiling water or hydrochloric acid 0·4 per cent. contain an active substance which on injection into the blood-vessels of an animal leads to a secretion of gastric juice. It is not contained in the mucous membrane of the fundus of the stomach. The substance is not a ferment as its activity is increased on boiling. 9. On the Relation of Nerve Cells to Fatigue of their Nerve Fibres, by F. H. Scott, Ph.D., M.B., with 11 figures in the text. This number of the journal contains the Proceedings of the Physiological Society of Dec. 16th, 1905, and of Jan. 20th and Feb. 24th, 1906.

Man.—In the March number of this journal Dr. C. G. Seligmann gives a description, with an illustration, of a trephined skull which was found in the island of New Britain in Australasia and is now in the Museum of the Royal College of Surgeons of England. In the right occipital region there is an oval aperture measuring in the chief vertical diameter 2·3 centimetres, and in the smaller transverse diameter 2·2 centimetres. The diploe is nowhere exposed, showing that the injury has been repaired during life, the shelving edge being quite smooth and compact.

Reports and Analytical Records
FROM
THE LANCET LABORATORY.

(1) "ENULE" GALL AND OPIUM; (2) "TABLOID" BLAUD PILL Gr. 5; (3) "TABLOID" XAXA; AND (4) PILOCARPINE NITRATE.

(BURROUGHS, WELLCOME, & Co., SNOW HILL BUILDINGS, LONDON, E.C.)

1. THE enule of gall and opium is an improved form of suppository, each containing extract of opium, a quarter of a grain and tannic acid, three grains (the equivalent of five grains of gall). The shape of the enule, while it facilitates insertion, practically prevents expulsion. The combination of drugs is admittedly valuable in the treatment of hæmorrhoids and certain inflammatory conditions of the rectum. 2. The tabloid Bland pill was found to give pure ferrous carbonate on interaction, the yield being about 20 per cent. The mass is now five grains instead of, as formerly, four

grains. 3. Tabloid "xaxa" is the trade-mark name given to the drug acetyl-salicylic acid issued by Messrs. Burroughs, Wellcome, and Co. The therapeutic properties of this salt are well known but its chief merit, according to many practitioners, is that it is without the unpleasant after-effects of salicylic acid. For example, it does not cause gastric irritation, being insoluble in the stomach but readily soluble in the intestinal canal. It has chiefly been used in the treatment of gout and rheumatism. 4. The preparation of pilocarpine nitrate in the pure state has presented some difficulty, many products showing a melting point some degrees below that of the pure salt. Researches in the Wellcome laboratory led ultimately to the production of a chemically pure product having a melting point of 175°–176° C. It is important that the alkaloidal salt should be pure, as otherwise it may be associated with alkaloids differing considerably as regards physiological activity.

SPARKLING WHITE MEDOC.

(NATHANIEL JOHNSTON, DUCRU-BEAUCAILLOU, MÉDOC. AGENCY: H. AND E. SELBY, 33, MARK-LANE, LONDON, E.C.)

It is not generally known in this country that an excellent sparkling wine possessing the dietetic qualities of a good champagne is produced in the Médoc After all there is no reason why a satisfactory sparkling wine should not be made from the same juice which produces an excellent claret, the grape skins, of course, being carefully kept out of the fermentation process. The method employed is analogous to that used in the making of champagne. The sparkling white Médoc (Ducru-Beaucaillou) which we have recently examined gives the following results on analysis: alcohol, by weight 12·38 per cent., by volume 15·30 per cent., equal to proof spirit 26·82 per cent.; extractives, 4·55 per cent.; mineral matter, 0·20 per cent.; volatile acidity reckoned as acetic acid, 0·09 per cent.; fixed acidity reckoned as tartaric acid, 0·712 per cent.; nitrogenous matters, 0·141 per cent.; glycerine, 0·200 per cent.; and sugar, 2·94 per cent. The ethers, in terms of ethyl acetate, amounted to 20 grammes per 100 litres of wine. These results compare quite favourably with those obtained in the analysis of the best brands of champagne, the ethers, in fact, occurring in a higher proportion. The soundness of the wine is evidenced in the practically negligible amount of volatile acidity. Apart, however, from analysis the wine possesses excellent æsthetic qualities. The value of sparkling wines such as champagne in disease is well known. Their agreeable stimulating qualities are often of great service when vomiting is persistent. The effervescent quality is undoubtedly an important factor in this connexion. There is no reason to think that the expensive brands of champagne are any better for invalid purposes than those sound white sparkling wines which are produced elsewhere and which, moreover, are sold at very much lower prices. For use in hospitals an important saving would be effected by the use of such wines. The wine, however, must be honest and produced from the grape. The price of this sparkling white Médoc is 48*s.* per dozen and two qualities may be obtained—namely "extra dry" and "brut." The "brut" wine contains 1 per cent. only of sugar.

HUMANOID.

(THE AYLESBURY DAIRY COMPANY, LIMITED, 31, ST. PETERSBURGH-PLACE, BAYSWATER, LONDON, W.)

This preparation of "humanised" milk is in many respects an advance on similar preparations which we have examined. The chief point about it, however, is that it is concentrated so that for use one part of humanoid is diluted with two parts of boiled water and the result is a product having the same composition as that of human milk. Our analysis of humanoid diluted to the extent just indicated was as follows: total solid matters: milk sugar, 7·22 per cent.; fat, 3·09 per cent.; proteid, 1·44 per cent.; and minera matter, 0·25 per cent. These results agree very closely with those obtained in the analysis of normal human milk. Humanoid, moreover, presents the same appearance as human milk—that is, that of a perfect emulsion. At all events the fat separates in the form of cream and not in a free state. It is evident that great care and ingenuity must have been devoted to the preparation of humanoid for, in spite of having been concentrated, the condition is that of fresh milk. The concentration, of course, effects an important economy.

(1) GLYCEROLE TRYPSIN; AND (2) EUCARENALIN SOLUTION.

(ARMOUR AND CO., 46A, HOLBORN-VIADUCT, LONDON, E.C.)

1. The employment of pancreatic ferments in the treatment of cancer has suggested the preparation of glycerole trypsin, which is a 10 per cent. solution. The vehicle being glycerine the activity of the ferment is preserved while the solution is not liable to change. One part of the glycerole mixed with an equal volume of normal saline solution or distilled water gives a 5 per cent. solution of the ferment. Trypsin may be administered hypodermically, by the mouth, or locally. 2. Eucarenalin is a 1 per cent. solution of beta-eucaine lactate containing half a milligramme of suprarenalin per cubic centimetre. The combination of this local anæsthetic and powerful hæmostatic is of recognised service in general surgical and dental practice.

GLENDUIE WHISKY.

(DUNCAN MACRAE AND SON, 16 MAINS-STREET, GLASGOW.)

This spirit evidenced age for it is particularly smooth to the palate and of a delicate agreeable flavour. The results of our analysis are consistent with the statement that it is a blend of grain and malt whisky and for this purpose well-matured spirit has evidently been chosen. We found that the ethers amounted to 76 grammes per hectolitre of alcohol, the furfural to one gramme, the higher alcohols to 108 grammes, and the aldehyde to eight grammes. There is a slight excess of acidity, due doubtless to storage in sherry casks. For medicinal purposes it is desirable that whisky should show the excellent results of analysis which this whisky gives, the feature being the development of ethers owing to its undoubted age. It is, in short, a whisky of finished character entirely free from harsh and acrid products.

(1) COFFEE ESSENCE; AND (2) COFFEE AND CHICORY ESSENCE.

(CADLAN AND CO., 66A, WELLS-STREET, OXFORD-STREET, LONDON, W.)

We have seldom met with a coffee essence that has given us a favourable impression. It is, in fact, hardly possible to prepare an essence of coffee which shall contain the entire properties and agreeable characters of the beverage prepared directly from the berry. The oils, for example, are seldom found in the extracts and during concentration a deposit is generally formed containing some of the essential ingredients. The above preparations, though not satisfactory to the palate when merely dissolved in hot water, are distinctly good when prepared with milk in the way directed. The flavour of the coffee essence is pleasing and resembles very closely that of a good infusion of coffee. Moreover, we found that it contained ½ per cent. of caffeine. The coffee and chicory essence has a somewhat sour flavour.

(1) ACETOZONE; (2) THYROIDECTIN; (3) SCOPOLAMINE AND MORPHINE HYPODERMIC TABLETS; AND (4) MENTHOLATED THROAT TABLETS.

(PARKE, DAVIS AND CO., 111, QUEEN VICTORIA-STREET, LONDON, E.C.)

1. We have already directed attention to the powerful germicidal yet non-toxic properties of acetozone, the chemical name of which is benzoyl acetyl peroxide. As an antiseptic it has been employed with success, it is stated, in typhoid fever, in dysentery, and in intestinal dyspepsia. In the form of an inhalant—diluted, that is to say, with liquid paraffin to which is added some chloretone—it has been used for spraying the nose, the mouth, the ear, or the throat. 2. Thyroidectin is a powder prepared from the blood of animals which have been deprived of the thyroid gland.

It is stated that thyroidectin can be depended upon to control the marked symptoms of exophthalmic goitre. 3. The hypodermic tablets of scopolamine and morphine are prepared for use in the production of general anæsthesia employed either alone or as an aid to ether or chloroform. It is stated that salivation is not excited, that the tendency to nausea is diminished, and that there are quiet and freedom from pain after operation. 4. The mentholated throat tablet contains one thirty-fifth of a grain of menthol, one-twelfth of a grain of benzoic acid, one-eighteenth of a minim of oil of anise, and one sixteenth of a minim of eucalyptol—an admittedly useful formula for allaying irritable states of the throat. The formula is not new but previously cocaine hydrochloride was included.

BRANDIES.

(PELLISSON PÈRE AND CO., COGNAC; AGENT, F. H. GOLDSELL, 81, GREAT TOWER-STREET, LONDON, E.C.)

We believe from the evidence of both analysis and the palate that these brandies are accurately described as being distilled from pure grape spirit and in the pot-still. They show the characteristics of genuine Cognac brandy and they bear evidence also of having been matured by age. We have determined the secondary constituents as exemplified in ethers, higher alcohols, furfural, &c., and find in each case that the amounts accord with those found in genuine Cognac brandies. The ethers in three specimens examined varied from 140 to 162, the furfural from 2·0 to 2·50, and the higher alcohols from 140 to 200 grammes per 100 litres of absolute alcohol present. The specimens examined were marked S.O.P., V.S.O.P., and 10 Years Old respectively. To the last specimen we give the palm for its fragrant mellow qualities but all are good brandies and suitable for medicinal use.

New Inventions.

A NEW CLINICAL THERMOMETER AND CASE.

Messrs. Grösche and Koch, of Ilmenau, Thuringia, Germany, have sent us a new form of combined clinical thermometer and case, the chief object of which is to facilitate the shaking down of the mercurial column after a patient's temperature has been read off. The upper end of the thermometer is permanently fixed to a short metal mount which can be screwed to the case in two directions, so that either (1) the thermometer may be inclosed in the case as for carrying in the pocket, or (2) so that the case may serve as a kind of handle for the thermometer when the mercurial column is to be shaken down, as shown in the illustration. The upper part of the case, above the plain tubular portion, consists of a coiled spring forming a cylinder about one and a quarter inches in length, which is elastic in any direction. This coiled spring is the special feature of the invention and we find on trial that the mercury can be shaken down more readily with the aid of the spring than without it. The thermometer itself is four and a half inches long, having a range of from 35° to 43° C divided into 0 1°. It is also lens-fronted, a form for which there seems to be a demand just now, although some practised observers have a preference for the older plain front.

Looking Back.

FROM

THE LANCET, *SATURDAY*, March 29th, 1828.

THE number of the Edinburgh Review, just published, contains an article on Dietetics, which is chiefly dedicated to a review of Dr. Paris's recent publication. Among the books classed together at the head of the article, is a treatise on the Morbid Sensibility of the Stomach, by the Editor of the late Quarterly Medical Journal. In general, Reviewers think it necessary to read at least the title of a book; but, in the present instance, even this mark of attention seems to have been dispensed with, for the author of the treatise in question is styled Dr. JOHNSTONE. The Reviewer, however, may have his reasons for thus spelling the name of his countryman, for we understand that JOHNSTONE is really the name of the late Quarterly Journalist, and that he has divested himself of the T, in order that he may have the gratification of alluding in his speeches at the Medico-Chirurgical, and other societies, to his illustrious *namesake*, the author of the Rambler. This ridiculous, but harmless piece of vanity, brings to our recollection an anecdote which we once heard from a Jamaica planter. In the West India Colonies, the planters are in the habit of giving the names of distinguished Europeans to their slaves, so that it is no uncommon occurrence to find William Shakspeare, John Locke, Oliver Cromwell, and other great personages, all working together in the same plantation. Our Jamaica planter had distinguished one of his slaves by the name of William Pitt. This man had acquired a little learning beyond his condition; he could read, and even write, after a certain fashion, and was, in other respects, an excellent slave, until his brain was turned by the doctrines, political and religious, instilled into it by a fanatic of the school of Wilberforce, who had, moreover, accelerated the catastrophe by plying the poor creature with newspapers, containing the parliamentary debates on the slave-trade. The first indication which William Pitt gave of his insanity was, a refusal to clean his master's shoes. The planter was astonished at this apparent contumacy in a slave whose general conduct was so exemplary. Under ordinary circumstances the whip would have been resorted to; but it soon became apparent that this was a case requiring a different species of coercion, when upon being reprimanded for his disobedience, William Pitt assumed an erect attitude, declaring, that, in the whole course of his parliamentary experience, he had never heard of a prime minister who cleaned shoes, and that, for his part, he was determined to tread in the footsteps of his right honourable predecessor, the Chancellor of the Exchequer!

WE have inserted, at the request of the Russian Consul General, an invitation to English Surgeons to enter the Russian Naval and Military Service. The document will be found at page 935. After having given it an attentive perusal, the *advantages* offered will not, we should think, induce English students to VOLUNTEER.

THE MIDDLESEX HOSPITAL MUSICAL SOCIETY'S CONCERT.—This society held its annual concert for the nurses and patients in the board room on March 21st. The society gave the part-songs entitled "The Hymn before Action," "A Wet Sheet and a Flowing Sea," and "The Chough and Crow." The society also sang the cantata, "A Song of Trafalgar" in which Mr. John Bardsley (tenor) and Mr. Marcus Thomson (bass), both of the Royal Academy of Music, sang the solos. Mr. Bardsley sang "Roses" and Mr. Thomson sang "The Sands o' Dee," both of whom were encored. Mr. Edmund Harding kept the audience in fits of laughter with his recitations "The Cabman's Story" and "My First and Last Appearance on Any Stage." Mr. Rohan Clensy gave a violin solo "Serenata" and "La Ronde des Lutins" and his splendid rendering of these two well-known pieces being received with great applause he gave an encore. Mr. L. E. Acomb played two flute solos, "The Broken Melody" and "A Graceful Dance." Mr. L. A Fennell sang "My Heart" which was much applauded. Dr. J. J. Pringle conducted and Mr. T. G. A. Burns accompanied. The concert terminated with the National Anthem.

THE LANCET.

LONDON: SATURDAY, MARCH 31, 1906

The Relation of the General Hospital to the Isolation Hospital.

ALTHOUGH experience has shown that the prophecies made with reference to isolation hospitals have not been wholly realised, the fact remains that these institutions are of great utility and that the public is beginning to demand their provision as an elementary part of our preventive measures. Whatever views may be held as to the necessity or desirability of isolating every case of the acute exanthemata, we imagine that even those who have attempted destructively to criticise isolation hospitals would not suggest that when a case of scarlet fever occurs in a county hospital the patient should be allowed to remain in the general ward. The question therefore arises as to what is the best isolation provision for such cases and what are, or ought to be, the moral or legal obligations of the local sanitary authority in the matter. The solution of this difficulty has reached a more or less acute phase in connexion with the County Hospital at Bedford, into the children's ward of which scarlet fever was introduced on three separate occasions during 1905, and the consequent isolation, disinfection, and so on, involved payments to local isolation hospitals of some £115.

The board of management of the County Hospital is of opinion that this is an unfair burden upon the hospital which is a purely charitable institution, and its view is that the cost should be borne by the isolation hospital of the district whence the patients come—i.e., by the ratepayers. Apparently the Bedford isolation hospital is willing to admit the cases in question, but as the County Hospital is not, it seems, liable at law for the cost of these cases the local sanitary authority protects itself by requiring a guarantee for payment from the County Hospital before any given case is removed. In doing this the local sanitary authority presumably takes its stand on the ground that no such authority is compelled by law to erect an isolation hospital and that these institutions being provided, as it were, by an act of grace the sanitary authority is entitled to make its own terms. To a certain extent this contention is legally sound—that is to say, the provisions of the Public Health Act, 1875, do not render it incumbent upon a sanitary authority to provide an isolation hospital; the power of making such provision is alone bestowed. But it may be pointed out that public opinion has moved somewhat since 1875 and it would seem by the tone of more recent legislation that it is morally incumbent upon every local authority to provide isolation for cases of infectious disease occurring in its district. The provisions of the Isolation Hospitals Acts enable county councils to compel the smaller sanitary authorities to provide isolation hospitals and it is obvious that an extension of the scope of these Acts is within legislative probabilities.

The case with regard to a county hospital is not quite so simple as it at first appears, since the sanitary authority of the district containing such hospital may contend that its isolation hospital is called upon to provide for cases brought from all parts of the county, and clearly if the town in question embraces a large number of charitable institutions there might be some force in this contention. But, on the other hand, the rates derive a certain advantage from such institutions and it is surely in the interests of a local authority to provide for the accidents arising out of its own prosperity and position. It appears to us that there is room for a more liberal policy on the part of the Bedford town council and we suggest that a conference between all the authorities concerned might lead to a reasonable compromise. In our view the citizens of Bedford have a moral right to the isolation accommodation of the local isolation hospital, and from whatever source the necessary expenses are procured we think that the County Hospital should not be called upon to defray them. In the case of patients coming from the rural districts around Bedford the question is a more difficult one, since it is possible that certain of these districts have no isolation accommodation or are too remote from Bedford to allow of the removal of the patients. It may be, therefore, necessary to make other arrangements and these are, we expect, best made by the Bedford town council, more especially as cases which have been admitted into the County Hospital and which have been sent temporarily to an isolation hospital may have to return to the County Hospital for treatment or operation. In this specific instance we suggest that the Bedford isolation hospital should isolate the Bedford cases free of charge to the County Hospital, and as regards cases coming from surrounding districts we are of opinion that the local authorities from whose districts the patients come should make themselves responsible for any reasonable charge on the part of the Bedford isolation hospital. We think, however, that it would be in the real interests of Bedford to take charge of all cases of infectious disease arising in its midst and this is the larger policy that we should like to see adopted in the country as a whole in relation to infectious cases occurring in county hospitals. It may, of course, be urged that a charitable institution such as the County Hospital should provide isolation accommodation for its own cases within the grounds of the hospital and there can be no doubt as to the desirability of such provision on a small scale in order that a suspicious case may be at once isolated. Such provision is, we understand, already made at Bedford. But it is impracticable for a small county hospital to provide the buildings and staff necessary for the prolonged isolation of cases of infectious disease and the course suggested above is, we think, preferable.

Anæsthetics and Tissue Proteids.

As time has familiarised us with the results that daily follow the use of such potent agents as anæsthetics there is a danger lest we overlook the fact that the mode of action of these agents even now is little understood. In the case of chloroform the first triumph of SIMPSON was followed in a

very brief space by the report of the first death—that of HANNAH GREENER—and it became recognised that great as the boon must prove it was not to be conferred without risk and loss of lives. So has it been with all anæsthetics. We are told that at last an agent is discovered which will annul consciousness and yet in no wise will endanger life. But experience soon shows that such assurances are vain and death dogs the steps of those who venture to employ such powerful remedies before they have mastered the facts concerning their mode of action. Perhaps no department of medicine has received more attention than has the pharmacology of anæsthetics. It has suffered from *ex cathedrâ* pronouncements and jejune theories but it has aroused the interest of the leading physiologists of the world and these men have elucidated its problems from time to time and each has added his quota to the sum of knowledge which we now possess. One of the most recent researches, that of Professor BENJAMIN MOORE and Dr. H. E. ROAF, is of great importance and much interest. The subject—certain physical and chemical properties of solutions of chloroform and other anæsthetics—is one of great difficulty from the experimentalist's point of view, and its aim—the attempt to trace the action which anæsthetics exert upon cell protoplasm—is novel and of considerable practical value. In the two reports which these gentlemen have submitted to the Royal Society[1] they advance the proposition that it may be fairly accepted that all known anæsthetics act in a similar way; their modes of behaviour may differ in degree but do not do so in kind. Not only do they affect animal cells, from the unicellular organisms to those of the highly organised tissues of nerve or muscle, but even the cells of the vegetable kingdom.

A large amount of experimental work has now been accumulated which supports this contention and the conclusion to which Professor MOORE and Dr. ROAF have come seems to be, at least, reasonable, that as the cell protoplasm alone is uniformly present it must be upon this cell protoplasm that anæsthetics exert their influence. It is their contention that in every type of living cell, from the simplest to the most complex, as the dose of the anæsthetic increases, so the activity of the cell protoplasm decreases, until finally the power of biological interaction is obliterated and the life of the cell is lost. The experimental work upon which Professor C. S. SHERRINGTON and Miss S. G. M. SOWTON have been engaged for some years demonstrated the fact that when the tissues of an isolated heart were perfused with various concentrations of chloroform in a suitable solution definite effects upon their protoplasm were produced. The cardiac contractions were rapidly diminished even when dilute concentrations were employed, but when the chloroform was no longer allowed to traverse the tissues of the heart the contractions became restored to their original amplitude. The diminution in the contraction was determined by the degree of concentration—that is, by the solution tension or osmotic pressure of the chloroform in the cells at the time: the higher the concentration the less the contraction and *vice versâ*. Professor MOORE and Dr. ROAF were struck by the importance of this discovery and determined to investigate what were the nature and the chemical changes, if any, which were involved. The behaviour of the muscular fibres of the heart suggested that some loose combination existed between their protoplasm and chloroform, a combination which could only obtain when the pressure of the anæsthetic was maintained up to a certain level, dissociation occurring as soon as the chloroform pressure was lowered. The study of the effects produced on the proteids of the blood by the influence of chloroform might, it was thought, throw some light upon the formation of this hypothetical combination. Accordingly experiments were undertaken by them with this view. These experiments form the basis of the first report presented by Professor MOORE and Dr. ROAF and are of singular interest and beauty. We can only indicate, however, their scope and give the conclusions at which the workers arrived. The research involved a review of the labours of E. SALKOWSKI, HORBACZEWSKI, and particularly those of FORMANEK, and as a result the correction of their results by more rigid attention being paid to every detail of the research. The experiments thus undertaken went to demonstrate that in the case of serum or hæmoglobin solutions chloroform has a higher solubility than in saline solutions or water and that even in dilute solutions the amount of chloroform dissolved in the solutions containing proteid is at the same pressure considerably more than in saline solutions or water. The curve of pressures and concentrations in the case of serum and hæmoglobin shows association at the higher pressures but not so in the case of saline solutions or water. These and other proofs are advanced to support the contention, and we must accept the evidence, that, so far as serum proteid or hæmoglobin is concerned, chloroform does in fact form unstable and dissociable compounds with protoplasm and limits its chemical activity. Professor MOORE and Dr. ROAF next undertook to extend their research by examining certain tissues in the fresh condition, emulsions in saline solutions of the ethereal extracts of the tissues of equal concentration to the tissues in "lipoid" or ethereal extractives, and estimations of the relative solubilities in water and saline solutions of other anæsthetics. The details of this further research which appear in their second report prove, Professor MOORE and Dr. ROAF believe, that the proteids of the tissues combine with chloroform in a similar manner to that already shown to obtain in the case of the proteids of the serum. Indeed, they confirm on all points the initial lines of reasoning, although, as was to be expected, various anæsthetics and diverse tissues evince dissimilarities in degree, although not in kind. It is important to notice that anæsthetics affect the cell proteids and not the lipoids. As the chloroform formed a loose unstable aggregation or combination with serum proteid, so, they found, did anæsthetics combine with the proteids of the various tissues examined, brain tissue, heart, muscle, liver, and so on. The more technical physical and chemical aspects of these reports hardly fall within the range of the present article, so we pass on to indicate the practical summary of Professor MOORE'S and Dr. ROAF'S work. The vapours of anæsthetics, the tensions of which in the air obey physical laws, enter the blood and form physical aggregation or chemical combination with the serum proteid and hæmoglobin but the tension is not that of a mere solution of an anæsthetic. It has been assumed, as is pointed out in the

[1] Proceedings of the Royal Society, vol. lxxiii., p. 352, and vol. lxxvii., p. 86.

work which we are considering, that the Dalton-Henry law applies to the case of anæsthetic vapours in air when brought in relation with the blood circulating in the pulmonary vessels, and that the amount of the anæsthetic taken up is directly proportional to, and varies directly with, the percentage of the vapour of the anæsthetic in the inspired air. We find, however, that the proteids of blood and of the tissues combine with chloroform and other anæsthetics in quite a different degree than obtains for saline solutions and water, and this must be reckoned with when anæsthetic vapours are brought into contact with circulating blood for prolonged periods. Again, the chloroform or other anæsthetic having been conveyed to the lungs enters into chemical union with the proteids of the blood and is thus conveyed to the tissues. It has been assumed that of these tissues certain possess an especial avidity for anæsthetics, and that the danger, or one of the dangers, lies in this selective preference by lecithin and cognate bodies. But when we realise that unicellular organisms are affected in a way quite similar to that which is shown by the highly complex tissues of mammals it seems to be a just contention advanced by Professor MOORE and Dr. ROAF that the explanation of anæsthesia lies in a more universal and simpler inter-relation between the protoplasm of the tissues and the anæsthetic. Admitting the physical aggregation and chemical combination of anæsthetic and proteid and that this possibility of association is a question of sufficient tension of the anæsthetic it is at least possible that herein lies the theory of anæsthesia. With the increase of the tension of the anæsthetic its effect upon those tissues the protoplasm of which has passed into association with it becomes enhanced, and when the level of that tension is lowered tissues become liberated from the dominance of the anæsthetic. In the case of the unicellular organism, as in that of the highly differentiated cell, the effect produced is at first limitation of chemical activity, function is stayed, and at last there is abolition of function. Professor SHERRINGTON'S experiments on the heart show the gradual loss of activity and ultimately the complete abrogation of all physiological existence.

This and all the intermediate stages are at least to be explained by the view that lessened chemical and functional activities depend upon the increasing tension in the tissues due to unstable combination of proteid and anæsthetic. Here again we come back to the thesis which was set long ago by PAUL BERT and which has to-day been forced again into prominence, that chloroform kills by high tensioned vapour being brought into relation with the proteids of the tissues and is harmless so long as the dose of anæsthetic absorbed is maintained at the requisite low level. The matter seems summed up in saying that the dose, or percentage, or tension in the blood and the tissues is the crux of safe anæsthesia.

"Medical Tactics."

THAT success in practice requires other qualifications in addition to a knowledge of medical science, in other words, that the practice of medicine is an art, is so obvious a truism as to appear almost platitudinous were it not that it is so frequently lost sight of. Many recently qualified practitioners on leaving hospital and commencing private practice find that their professional training is far from complete and discover that they have to acquire this additional knowledge in the expensive school of experience. It is obvious that no hard-and-fast rules of procedure can be laid down to guide the young practitioner in the management of his patients, nor is it possible, perhaps fortunately, to make this a subject of lecture in the curriculum. None the less, teachers of clinical medicine would do well to remember that their manner of examining and dealing with their patients may not be without great influence upon the future of the students whom they are instructing. Indeed, many a practitioner can gratefully recall the valuable hints which he received from those under whom he studied, in the sympathetic and kindly treatment of their hospital patients. In no profession more than that of medicine is a knowledge of mankind and of the world of greater value, and one advantage of the old system of apprenticeship was the early period of his career at which the student was brought into contact with patients and learnt from his principal the rudiments of the art of practice. From the days of HIPPOCRATES to our own times there has been no lack of mentors or of guides in this respect. It may be of some interest to refer to one of the latest of these.[1] Dr. FRITZ SCHLESINGER of Berlin has published a pamphlet entitled "Medical Tactics" and purporting to be a series of letters to a young practitioner who laments the small progress made by his own practice. The name is a happy one, as the letters contain more than a mere code of professional morals, including as it does a system or method of procedure in regard to the manner of visiting patients, of eliciting their history, of examining and treating them, and of the course to adopt in the various contingencies that may arise in an ordinary general practice.

Dr. SCHLESINGER is careful to emphasise the fact that the directions which he gives are the outcome of his own personal experience and that they are not therefore to be regarded as infallible rules. "Medical tactics" he defines as the art of the practitioner in virtue of which he secures the confidence of his patient and retains it, having always in view the ultimate aim of all medical measures—that of bringing relief to the patient. From the very nature of the profession of medicine it involves the closest and most confidential relations with patients often in circumstances of peculiar difficulty and therefore discretion, tact, and sympathy are essential for gaining that confidence which is a necessary preliminary to success in treatment. The first impression made on the patient by his medical attendant is often a matter of great importance in this respect and Dr. SCHLESINGER therefore advises punctilious personal cleanliness and orderliness in dress without any tendency to elegance and counsels the avoidance of any eccentricity of manner. The practitioner is to be master of the situation from the moment when he enters the sick room and likewise master of himself, so as not to convey by word or look that he has formed an unfavourable impression of the nature of the patient's ailment or of its probable course. He is to be firm and decided in his statements and his directions. He is also enjoined to remember that his calling is the most exacting of all professions, making large demands upon his health and strength, and therefore he should avoid excesses

[1] Aerztliche Taktik: Briefe an einen jungen Arzt (Medical Tactics: Letters to a Young Practitioner), by Dr. Fritz Schlesinger. Berlin: S. Karger. 1906.

of all kinds, since he may at any moment be brought face to face with difficult situations requiring all his faculties at their best; he should likewise refrain from gambling, speculation, or other outside interests involving stress or anxiety, but should seek diversion in artistic, dramatic, or musical pursuits, or in sporting or manly exercises. He should likewise not become on too familiar or friendly terms with his patients, as this may possibly weaken his authority.

Dr. SCHLESINGER rightly regards the conduct of the examination of the patient in reference to his complaints and his family and personal history as a most important part of the tactics of medicine and propounds the aphoristic piece of advice that to be a patient listener is a matter of the greatest importance. He warns against the attempt to impress by making a rapid diagnosis and strongly recommends a thorough and detailed examination in all cases. He advises that the diagnosis should in most cases be explained to the patient and only withheld if it is likely to cause him distress, grave anxiety, or hopelessness. In cases where no diagnosis is arrived at he suggests that the patient or his friends should be told the difficulties. In reference to treatment, it is advisable to avoid anything like a stereotyped or routine method, for the individual peculiarities and temperament of each patient will require careful consideration. The adjustment of the treatment to the particular needs of an individual patient requires all the knowledge of human nature that a man can acquire. The restless, the anxious, and the heedless types of persons need widely different modes of procedure if the best possible result is to be obtained in each case. We can endorse these suggestions, for it is too frequently lost sight of that it is the patient who has to be treated, not the disease—in other words, that disease is not an entity but a condition. In general, it is recommended that the directions given should always be clear and free from ambiguity or any possibility of misconception and should be repeated and written down if necessary. A wise precept, and one too often neglected, is that of making recommendations that are within the means or capabilities of the patient and his friends, and of always taking into consideration his social position and his economic limitations. If any unusual drug or method of treatment is recommended it is advisable to indicate its objects to the patient. Secret preparations should be discountenanced but the use of domestic remedies is not necessarily to be banned. In reference to prognosis, Dr. SCHLESINGER maintains that an incorrect forecast is of more injury to the reputation of the practitioner than a wrong diagnosis and that nothing has done more to swell the following of the quack than incorrect prognosis. He strongly recommends hopefulness and regards it as a grave error to give an absolutely unfavourable prognosis either to the patient or to his friends. Even when asked the outlook by a patient apparently nearing death he regards it as a humane duty to speak hopefully, for he maintains that no patient ever quite gives up hope. On the other hand, it is wise to warn the relatives in very serious cases of the possibility of a fatal issue but even then not in absolutely hopeless terms. One of the letters is devoted to a consideration of the number of visits which should be paid, often a matter of some difficulty to determine in actual practice. Dr. SCHLESINGER'S suggestions in this respect are eminently practical. He advises that attention should be paid to the circumstances of the patient and to the nature of the case, whether acute or chronic. He also suggests that if a patient is anxious and sends on the first appearance of symptoms it is wiser to visit more frequently than in the case of one who, in similar circumstances, does not send until he has been ill for several days. In regard to professional secrecy, he is most decided that to this there shall be no exceptions and recommends the most extreme circumspection, not only in reference to information given to other practitioners but to relatives of the patient. The indications for consultations and for operation or removal to hospital are also discussed in some of these letters; in reference to consultation, Dr. SCHLESINGER strongly advises the practitioner to meet the wishes of the friends and not to consider himself slighted by the wish for a second opinion. Although a few of the suggestions offered in this interesting pamphlet would appear to be unnecessary in the case of English practitioners we can recommend it to our readers as containing a great deal of useful information, evidently the outcome of wide experience and of that sound common sense so characteristic of our German colleagues.

Annotations.

"Ne quid nimis."

NATIONAL ASSOCIATION FOR THE PREVENTION OF CONSUMPTION AND OTHER FORMS OF TUBERCULOSIS.

THE seventh general meeting of the above association was held on March 20th. The council's report is an interesting one, as showing the measures which are being undertaken in order to assist in controlling the spread of pulmonary tuberculosis. We are glad to notice that the financial position of the association has materially improved. In its report for 1904, the council called the attention of the members to the financial straits in which the association was placed, the revenue account for the year showing an adverse balance of £365. As the result of a public appeal £765 8s. were subscribed and a further sum of £97 5s. was received as the proceeds of a dance at the Grosvenor Galleries. By these means the debt has been cleared off and a small balance remains to the credit of the association. The council feels, however, that the financial position must still be considered as far from satisfactory, as the assured income fails to meet the expenditure and disappointment is expressed that the association does not command the general interest and support which similar movements have succeeded in winning in some foreign countries. This is to be regretted. We have constantly maintained that the strongest factor in helping to stay the spread of pulmonary tuberculosis is the tuition of patients suffering from the disease and their friends by the medical attendant. Personal instruction in the method of disposal of the sputum and general hygiene would, we believe, be productive of better results than the imposition of notification. The association is helping to educate the public in every way and the efforts of the council should be strongly supported. The expense incurred in the publication of the journal *Tuberculosis* is considerable, added to which are the printing and distribution of leaflets

on the various measures which individuals may adopt to aid in "the prevention of consumption." It is therefore a matter to deplore if the association is hampered by want of funds and we trust that the necessary increase of subscriptions will be forthcoming. The report deals with the association's work during the past year. A memorial was drawn up for presentation to all public authorities, pointing out the important issues at stake, the need for action, and the measures which experience has shown to be necessary to cope with the disease. The resignation of Mr. Malcolm Morris after eight years' service as treasurer is announced, and Mr. George Harwood, M.P., has consented to undertake the duties of the office. Mr. Morris has done much to assist the association and the obligation due to him is fully acknowledged.

THE MEDICAL REGISTER FOR 1906.

THE Medical Register for 1906 has appeared with commendable promptitude in the month of March. The number of pages, exclusive of the advertisements at the end, is 1791, as against 1758 for 1905. The foreign list, which commenced in 1902 and then contained only one name, now contains 16. Turning to the number of names on the Register up to Jan. 1st, 1906, we find that the total number for England, Scotland, and Ireland is 39,060, whereas in 1905 it was 38,492. In 1905 1240 names were added by registration, 748 were removed, and 76 were restored. 572 names were removed on evidence of death, two on their owners "ceasing to practise," 169 under Section 14 of the Medical Act, and five under Sections 28 and 29. With regard to the names removed by death we have looked at the obituary list of the current Medical Directory and have checked the first 25 names therein—viz., those commencing with A. Of these 25 one is still on the Medical Register. We have often said that the presence on the Register of the names of deceased persons is a real source of danger to the public and although, of course, the name of a deceased member of the medical profession must be allowed to stand on the Register until complete evidence of his death is forthcoming we think that the most exhaustive inquiries should be made for the purpose of verification. The Medical Register is certainly a more accurate work of reference than it was some years ago; but it is of the utmost importance not only to the public but also to medical men themselves that it should so far as possible be absolutely accurate. We are glad to note that at last the name "George Augustus Coombe" of Lord Street, Southport, has been removed and the correct name inserted. It is many years since Sir George Augustus Pilkington changed his name and we are at a loss to know why the name of George Augustus Coombe has so long been permitted to remain on the Register. The possibilities of personation afforded by its retention are obvious.

DANGERS OF THE MOTOR-OMNIBUS.

THE dangers likely to arise when motor-omnibuses become universal have been illustrated at the hearing of a summons at the Marylebone police-court against the drivers of two of these vehicles for racing. While they were busily employed in thus competing for fares one of them was seen to go on the wrong side of a street refuge and shortly afterwards, owing to a cab which threatened a collision, one of them drove on to the pavement. A passenger, with proper public spirit, came forward and supported the evidence of the police, with the result that fines of £5 with 2*s.* costs were inflicted upon both drivers. If very much heavier penalties could be imposed upon the owners of these vehicles in respect of all breaches of the law by their servants in performing their work as such the supervision of them would be improved and the public safety might then be protected more efficiently. It will have been observed, however, that according to the drivers and conductors of one of the companies, who have recently been on strike, their employers desire to pay them not by the day but by the number of journeys accomplished, thus putting a premium upon fast driving. Anyone also who has ridden in motor-omnibuses recently on the routes where they are liable to be crowded must have noticed cases in which they are allowed to be filled inside beyond the proper complement of passengers for which they are stated to be licensed. The result of this is that persons occupying the seats are deprived of a large proportion of the small amount of air available, air already so impregnated with the odour of petrol as to be extremely disagreeable, and in addition are subjected to the danger that a lurch or jolt will hurl one of the "strap-hangers" upon them. Attention has recently been called to this matter and it is to be hoped that those who travel in motor-omnibuses will not let it drop. Public opinion should support the magistrates and the police in all efforts to secure the safety and comfort of those who use the streets and public vehicles. The motor-omnibus is capable of great usefulness but at present combines with its utility an appreciable amount of avoidable danger and discomfort for those who use it and for many who do not. There has been hitherto an absence of serious accidents due to the collision of motor-omnibuses with one another or with other vehicles but this immunity is not likely to continue when their numbers increase and when familiarity with danger teaches their drivers to look upon it with more of the proverbial contempt than they have already acquired.

THE MARSEILLES COLONIAL EXHIBITION AND SANITARY CONGRESS.

DURING the month of April a Colonial Exhibition will be opened at Marseilles by M. Fallières, President of the French Republic. By the side of the commercial interests involved it has been realised from the first that in the colonies, even more than in the home countries, good sanitation is of the utmost importance. Not only will the exhibition open its doors to exhibitors of objects bearing on sanitary questions but a congress will be held to discuss these problems. This gathering is entitled the National Congress of Hygiene and Public Salubrity. While not officially an international congress, still sanitary reformers from all parts of the world will receive the welcome and hospitality for which the French people have acquired so just a reputation. The Congress will meet at Marseilles from Oct. 7th to 13th next. The Congress is under the patronage of the Ministers of the Interior, the Colonies, Commerce, Public Instruction, and all the local authorities. The object is to "unite together men engaged in practical work, such as medical men, chemists, veterinary surgeons, engineers, architects, inventors, professors, directors of public works, and all who study the practical application of the principle of public and private hygiene, of industrial and collective hygiene, and the means of purifying and rendering wholesome towns and localities." The Congress proposes to popularise the knowledge of hygiene and thus to induce all concerned, whether the director of works or the simple labourer, to realise the importance of their task when they have to carry out sanitary improvements. The Congress has already received promises of support from many well-known sanitary reformers. It will be divided into five sections. First, town sanitation, including a matter that is not sufficiently studied—namely, the warming, ventilation, and disinfection of the conveyances used as means of communication, cabs, trams, electric railways, and so on. The second section deals with industrial, social, and military

hygiene; the third with naval and colonial hygiene and sanitation at sea; the fourth with the prevention of the spread of epidemics and the hygiene of childhood; and the fifth and last section with sanitary legislation, administration, and demography. Of course, there will be excursions and in this respect there is much to see in the neighbourhood of Marseilles that is of exceptional interest to the student of sanitation. The secretary-general of the Congress is M. de Montricher, 7, rue Grignan, Marseilles, who, as a sanitary engineer, has succeeded in utilising the household refuse of Marseilles to fertilise the arid rocky plain of La Crau. There can be but little doubt that this Congress will prove useful and interesting.

ADVERTISING BY DENTISTS.

THE endeavours made by the British Dental Association to compel the proper authorities in this country to regard advertising by dentists as disgraceful conduct have not met with the success which they deserve. In our colonies they seem to manage matters of this kind better and the *Natal Government Gazette* of Dec. 19th, 1905, contains an important notice on this question issued under the provisions of the Natal Dentists Act of 1896. The notice reads as follows:—

Rules and Regulations to be Observed by Dentists: Framed under the Provisions of Section 9 of the Dentists Act, 1896.

Any dentist entitled to practise in Natal who shall:—

(a) Publicly exhibit specimens, appliances, or apparatus of dental or other nature; or

(b) Advertise either in the newspapers, or by other similar agency; or

(c) Attempt to induce work by means of advertisements or circulars describing modes of practice, patented or secret processes, or of such a nature as to indicate claims of superiority over other practitioners, or depreciating the value of their work; or

(d) Publish his scale of professional charges, whether fees alone are mentioned, or cheapness or other advantages indicated;

shall render the offender liable to be adjudged by the Medical Council as guilty of disgraceful conduct in professional matters and to have his name erased from the Register. Providing always that a notice in card form to the effect that a Dentist intends to commence practice in a certain locality, or intimating a change of address, shall not be considered as an advertisement; provided such notice is not continued for a longer period than one month from the date of its first appearance. And providing, further, that a notice merely intimating that certain places will be visited at specified times, shall not be regarded as an infringement of the above rule.

A MODIFIED UNGUENTUM HYDRARGYRI OXIDI FLAVI FOR OPHTHALMIC USE.

M. Emile Dufau has recorded in the *Répertoire de Pharmacie* of Feb. 10th a new formula for the preparation of the yellow oxide of mercury ointment, based on a study of the conditions which obtain when the ointment is applied to the eyes. He points out that when the ointment comes in contact with the tears in the eye a reaction takes place between the mercuric oxide and the sodium chloride present in the tears, with formation of mercuric chloride and caustic soda. This reaction is capable of explaining the therapeutic action of the ointment, which may be attributed to the slow and continuous production of mercuric chloride. The production of caustic soda may account for the irritation and pain which frequently follow the application of the ointment to the conjunctiva. When the ointment was first introduced it was prepared with a fatty basis which tended to neutralise the caustic soda but during recent years soft paraffin, either alone or mixed with hard paraffin, has replaced the animal and vegetable fats. The employment of fatty bases—e.g., lard—is open to the objection that they exert a reducing action on the mercuric oxide, thereby causing a blackening in the colour of the ointment and lessening its efficacy. The disadvantages of using paraffin and fatty bases are overcome by mixing soft paraffin with about an equal weight of wool-fat. The following formula has therefore been devised: mercuric oxide, 1 part; soft paraffin, 9 parts; and wool-fat, 10 parts. The mercuric oxide which has given the best results is an orange variety, already described by M. Dufau.[1] It has advantages over the red and yellow varieties in that it can be washed quite free from impurities and is readily reduced to an impalpable powder. It should first be rubbed with an equal weight of rigorously pure soft paraffin, previously melted by heat, and then mixed with the remainder of the basis. The ointment when prepared in this manner is readily tolerated and keeps well. It is soft enough to melt at the temperature of the body, it mixes with the tears sufficiently to enable it to adhere to the eye, and while it neutralises the caustic soda produced it does not itself undergo reduction.

INSTITUTE OF MEDICAL SCIENCES FUND, UNIVERSITY OF LONDON.

THE Senate has authorised the formation of a general committee to promote the object of this fund. The following have consented to join the committee: The Earl of Rosebery, K.G., the Chancellor (President), the Vice-Chancellor, Sir Edward H. Busk, Lord Rothschild, Lord Avebury, the Bishop of London, the Bishop of Stepney, the Hon. W. F. D. Smith, M.P., Mr. Alfred de Rothschild, Mr. Leopold de Rothschild, Mr. Alfred Beit, Lord Justice Cozens-Hardy, Sir Edward Fry, Mr. Cosmo Bonsor, Mr. A. C. Cole, Sir Thomas Barlow, Bart., Sir William H. Broadbent, Bart., Sir R. Douglas Powell, Bart., Sir Frederick Treves, Bart., Mr. John Tweedy (President of the Royal College of Surgeons of England), Sir Michael Foster, Sir Charles Metcalfe, K.C.M.G., Sir E. Cooper Perry, Sir Arthur Rücker, Sir Henry Roscoe, Sir William Ramsay, Sir John Wolfe-Barry, Mr. J. G. Wainwright (treasurer of St. Thomas's Hospital), and Mr. Henry Harben (chairman of St. Mary's Hospital). The honorary treasurers are Dr. J. Kingston Fowler and Mr. H. T. Butlin. A considerable sum is still required in order to carry out the scheme.

THE "SCRATCHING REFLEX" IN THE DOG.

THE familiar act of scratching executed by the dog when the flank is lightly touched has been made the subject of research by Professor C. S. Sherrington. This reflex movement belongs to a class that he has termed "long spinal reflexes." In the long reflexes, when the stimulus is applied to the skin of the neck, the fore limb, the trunk, the hind limb, or the tail, the answering movement is not confined to its own region but affects the muscles supplied by a distant segment of the cord; whilst when in a reflex reaction the muscular response occurs in the same region as that in which the stimulus is applied the term "short reflex" is employed. The "scratching reflex" may be most satisfactorily investigated in dogs (though observable in the cat and the goat) after mid-cervical section of the cord, as the movements are then much exaggerated. They occur on the same side as that on which the stimulus is applied and after recovering from the shock of such section can be started with an extremely feeble irritation of the skin of certain areas of the cervical, thoracic, and abdominal regions, resembling collectively a saddle. The frequency of the rhythm of the scratching depends but little, if at all, on the rate at which the stimulus is applied and the reflex is uncrossed, that is, if the left flank be stimulated the muscles of the left leg are brought into play and *vice versâ*, the side on which the effect is produced being very precisely determined by the middle line of the back as the dividing line of the stimulus. If both sides be stimulated simultaneously the reflex acts are not bilateral but unilateral, shifting, however, after a time from one side to the other. The reflex once initiated will generally continue of itself long

[1] Répertoire de Pharmacie, 1903, p. 305.

after cessation of the cutaneous stimulus by which it was evoked, and Professor Sherrington has timed it to continue for three and a half minutes after the skin stimulus ceased to be applied. The reflex is rapidly stilled by gently confining the movement of the limb and he therefore concludes that the alternating movements of flexion and extension are kept up reflexly by mechanical stimulation of the afferent nerves of the muscles and joints concerned in the movements. The place to which the paw of the scratching limb is approximated by the reflex movement distinctly varies with the "locus" of the application of the stimulus; the paw is carried farther dorsally when the stimulus is applied more dorsally. In his most recent observations, in the *Journal of Physiology* for March, Professor Sherrington finds that the scratching reflex of the spinal dog can be elicited by electrical as well as by mechanical stimuli, though the latter are more effective. In whatever manner they may be excited, whether by contact, electricity, or heat, the separate flexions of the limb show a frequency of about 4·8 beats or contractions per second and graphic records taken from time to time over a period of two years and three months show little variation in the rate and general features of the rhythmic movement. The uniformity of the frequency of the "reflex" independently of the frequency with which rhythmic stimuli are applied shows that there is a rhythmic recurrence of a refractory phase, which is profound since the most intense stimuli altogether fail to break it down. The refractory phase has its origin in an intraspinal mechanism between the central end of the afferent or receptive neuron and the central end of the efferent or motor neuron. The latent period of the scratching reflex is long as compared with other reflexes but its duration may be shortened by intensifying the stimulus or with a rhythmic stimulus increasing its frequency. Professor Sherrington remarked that it was not clear how the scratching reflex, considered as an adaptive reaction, succeeded in relieving the sentient surface, but suggested that it might act by causing rapid and brief-lasting local extinction of the responsiveness of the surface at the seat of irritation.

BUTTER AND DRIPPING.

QUITE recently we pointed out that in some ways the detection of adulteration is resolving itself into a scheme for exposing the devices of skilled scientific men, for there is little doubt that there are men who in the name of science aid and encourage the practice of adulteration and who place their knowledge and skill at the disposal of manufacturers, knowing full well that their advice and suggestions are to be applied with the deliberate aim of defeating the detection of fraud. Our remarks are completely justified by the evidence now being given before a select committee of the House of Commons appointed to inquire into the question as to how legislation may be made more effective in dealing with the universal adulteration of butter. We are glad that these proceedings are giving prominence to what is nothing short of a scandal. Foreign fats are being manipulated in such an ingenious way as to deceive not only the public but the skilled analyst also, and there are undoubtedly on the market large quantities of fatty compounds masquerading as butter but which contain little if any butter at all. The butter trade, or that unscrupulous section of it which is responsible for this fraudulent dealing, would be properly rewarded by the public giving up anything that pretended to be butter and substituting for it the old-fashioned, honest fat caught in the dripping-pan. Dripping, and more particularly beef dripping, is a very excellent and wholesome fat food, and, moreover, has a pleasing flavour due to the osmazone developed in the beef during cooking. A slice of bread uniformly covered with a thin layer of dripping is a complete food and affords an excellent diet for maintaining the weight and the heat of the body. It is the whim of some people to affect a silly contempt for dripping because it is so often the poor man's and his children's substitute for butter. In regard to this it can at least be said that in such a case the poor man and his children are being better fed than the rich when the latter have foisted upon them butter which is not butter but either foreign fat or butter largely diluted with moisture. We should like to see the prejudice against dripping abandoned and its use in the place of butter very largely extended. As a fat food dripping has no rival, and it is well known how satisfactorily growing children thrive upon it. At all events the dripping-pan might, we think, be turned to good account just now by helping to defeat the wiles of the adulterator of butter and in this way it would be perfectly easy for the householder to insure for his family an honestly obtained, a correctly described, and a very nourishing fat food.

TRANSITION OF CARCINOMA INTO SARCOMA.

SOME facts of exceptional interest with regard to the growth of cancer, which have been recently observed in the Cancer Department of the Frankfort Institute of Experimental Therapeutics, were published by Dr. Hugo Apolant in the *Frankfürter Umschau* of March 27th. As they seem of a nature to throw some new light upon the subject they are here briefly recorded in Dr. Apolant's own words. After referring to the study of malignant tumours by means of inoculation experiments as carried out by Hanau, who was the first to communicate a carcinoma from one rat to another, and at a later date by Borrel in Paris and Michaelis in Berlin, Dr. Apolant proceeds to relate what has been recently achieved in his own institute. "The inoculation experiments," he writes, "which have been carried out here systematically, have not only furnished data for further experiments but have also given rise to the discovery of new positive facts, which are themselves of high scientific interest, and at the same time open out a prospect of studying further problems successfully. The tumours artificially produced in the Frankfort Institute have shown an *energy of growth* such as has never been previously observed. Swellings of the size of a cherry are developed on the bodies of mice in a few days and frequently in the course of a few weeks they attain to dimensions greater than the natural size of the mice themselves. ..... There are, as is well known, two chief groups of malignant tumours, the carcinoma, or cancer proper in the narrower sense of the word, and sarcoma. The forms differ both in their structure as visible to the microscope and in the fact of their originating in different tissues of the body. Carcinoma is invariably developed from the epithelium forming the superficial layers of the skin and the functionally important portions of the glands and their ducts. Sarcoma, on the other hand, originates in the connective tissue. ..... In the human being malignant tumours are either definitely carcinomatous or definitely sarcomatous, and 'mixed tumours' which belong to both classes are rarities. In mice spontaneously developed mixed tumours have not yet been observed, so that it caused much surprise when in one of the carcinomas cultivated in the institute during the tenth process of inoculation the signs of a commencing sarcoma suddenly appeared. ..... Still more striking was the further fact that in the course of the four following stages of the inoculation the carcinomatous portion of the tumour became completely and permanently suppressed by the sarcomatous portion which in the case observed attained to a luxuriant growth. In this way what was originally a pure

carcinoma became a pure sarcoma. Of particular interest now is the fact that an analogous occurrence was observed in two other quite independent carcinomatous growths, with the difference, however, that in the one case the development of sarcoma took place so late, but so rapidly, that the 'mixed tumour' stage was only observable in one of the stages of inoculation (*Impfgenerationen*)—viz., the 68th, while in the other case this mixed tumour stage is still maintained as far as our present experience reaches. According to the pathological views which at present prevail the direct transition of a carcinoma cell into a sarcoma cell is altogether inadmissible. A positive explanation of this very peculiar process which has never yet been observed is not at the present time forthcoming. Among the possibilities which may be taken into consideration the hypothesis which explains the development of the sarcoma as the effect of excitation has much in its favour, the excitation being produced by chemical changes in the carcinoma cells and gradually stimulating the cells of connective tissue found in every cancer in the direction of sarcomatous formation."

THE TEETH OF THE PYGMIES.

A PAPER on the Teeth of the Pygmies of Central Africa is published in a recent issue of the Transactions of the Odontological Society, vol. xxxviii., No. 3. The author, Mr. A. F. Howe, after giving a brief account of this interesting race of people, describes five skulls, two of which are contained in the collection of the Royal College of Surgeons of England, the remaining three being in the British Museum. He also gives a brief description of the teeth of the six pygmies brought to this country by Colonel Harrison, adding illustrations of the mouth in three cases. The teeth of the pygmies appear to be good in structure, free from caries, and liable to excessive attrition, probably due to the nature of the food. In one case, that of "Mafutiminga," a male, aged 22 years, a large space exists between the maxillary central incisors and is not due to the action of the frænum of the lip, as is so often the cause; in a second case there is a marked rotation of the maxillary right second premolar; while in a third case, that of a male, aged 35 years, there is marked periodontal disease, five of the teeth having been lost from this cause. In the discussion on the paper Dr. F. C. Shrubsall drew attention to certain features common to all classes of pygmies—namely, the curious shape of the posterior part of the mandible; the sigmoid notch is very shallow, and at the same time there is an exceedingly rough edge at the angle of the jaw, the condition suggesting a disproportionate use of the masseter and pterygoid muscles. The ascending ramus, too, is very short, particularly in Bushmen, the width being sometimes greater than the height. In the wearing away of the teeth every tooth seems to grind down very largely from behind, which is apparently due to some curious method of feeding.

OBSTRUCTION OF THE CYSTIC DUCT SIMULATING APPENDICITIS.

THE great frequency of appendicitis as compared with other acute abdominal conditions renders it likely that it will be diagnosed as present in cases where the signs and symptoms point to some acute lesion on the right side but are not sufficiently definite for certainty in diagnosis. There are some cases of biliary colic, especially when the obstruction is in the cystic duct, which are especially liable to be looked upon as instances of appendicitis. Dr. G. R. Harris of Norwich, Connecticut, has reported in the *International Journal of Surgery* for January three cases in which this error of diagnosis occurred. In the first case the patient a widow, aged 70 years, had an attack of profuse vomiting; a diagnosis of gastro-enteritis was made but the symptom did not abate and diarrhœa appeared. The right rectus muscle was then found to be rigid, dulness on percussion was manifest in the neighbourhood of McBurney's spot, and there was much general distension of the abdomen. A diagnosis of appendicitis was then made and in this other surgeons concurred. When the abdomen was opened the appendix was found to be healthy but it was removed. Further search disclosed a smooth elongated body presenting at the upper angle of the abdominal wound; it was about six inches in length and two and a half inches in diameter and it was readily recognised as a gall bladder. It was brought to the surface and opened and normal bile was evacuated; then by means of a scoop two fairly large stones were removed. The opening in the gall-bladder was stitched to the skin and the remainder of the wound was closed. An uneventful recovery followed, the biliary fistula closing in six months. In the two other cases Dr. Harris was able to correct his diagnosis as soon as the patient was thoroughly under the influence of the anæsthetic and no attempt was made to examine the appendix. Cases such as these have occurred in the practice of nearly every surgeon who has had much experience in abdominal surgery, but they are important, as the surgeon might rest satisfied with removing the appendix even though it was not the cause of the symptoms. When the appendix is apparently healthy it is always advisable to look for some other cause of the illness.

RURAL DEPOPULATION AND PAUPERISM.

Mr. C. S. Loch, secretary of the Charity Organisation Society, on March 20th read before the Royal Statistical Society a paper on the Statistics of Population and Pauperism in England and Wales, 1861–1901, in the course of which he discussed the effect of the wholesale migration from rural districts to towns upon pauperism in town and country and in England and Wales generally. Local Government reports show, as Mr. Loch points out, that during the 40 years 1861–1901 the rate of pauperism in England and Wales—that is, the proportion of the population in receipt of indoor and outdoor Poor-law relief—declined from 42 to 21 per 1000, a decrease of 50 per cent. It appears, moreover, that, speaking generally, the pauperism rate is twice as high in rural as in urban districts. This marked difference between the proportional rate of pauperism in town and country is probably due to the fact that the migration from rural districts consists mainly of selected young and capable persons, male and female, seeking the better wages and less monotonous life in town. The less active and the less ambitious, including the halt and maimed, remain in the rural districts where the low wages afford less opportunity for old-age provision; moreover, a certain proportion of the migrants to towns, domestic servants, shop assistants, and others, when health fails drift back to their native rural districts and there become claimants for Poor law relief. It is also a fact that rural populations almost invariably include a larger proportion of old persons than do town populations. These are some of the causes of the high rate of pauperism in rural districts, and the lower rate in urban districts may safely, in the main, be attributed to the effect of the immigration of young, active, and healthy lives and to the consequent small proportion of old persons in the population. As regards the effect of this migration upon the general rate of pauperism in England and Wales the inquiry is full of interest but Mr. Loch's paper is scarcely conclusive on the point, although he expresses the opinion that "the movement of the people from the country districts to the towns has tended to produce economic conditions under which they have been able to maintain themselves better and has led to a large reduction of pauperism." The large reduction in the general rate of pauperism during the 40 years dealt with in the paper is beyond question and this

may probably be in great measure due to industrial prosperity, which, coincidently with agricultural depression, has produced this recent remarkable aggregation to towns. This is probably, however, only one of the factors that have in the past 40 years produced the marked decline in the pauperism rate in this country. In the discussion which followed the reading of Mr. Loch's paper Sir William Chance declared that pauperism is mainly a matter of administration; and its seems probable that a large proportion of the decline of pauperism in the 40 years was due to improved and more careful Poor-law administration. It is equally probable that the marked recrudescence of pauperism that has occurred since 1901 is in great measure the result of a marked tendency to greater laxity of administration.

THE PHILLIPS MEMORIAL LIBRARY.

WE are asked to state that through the generosity of Mrs. Phillips there has been established in the Aberdeen University Union a medical reference library in memory of her husband, the late Dr. C. D. F. Phillips. Every branch of medical science will be represented in the library, but special attention will be paid to the pharmacological section which it is desired should be brought and kept abreast of the latest advances in materia medica. The library committee will welcome any reprints of papers on original work in pharmacology, a good number of which have been already received from Dr. William Murrell, Professor R. Stockman, Professor J. T. Cash, and others.

THE VESICATING PROPERTIES OF METHYL IODIDE.

THE interesting discovery has been made by Dr. Causson (and published in the *Répertoire de Pharmacie* of Feb 10th) that methyl iodide is a more powerful vesicant than cantharides. It is, moreover, a cleaner preparation than the cantharides preparation and has the further advantage of exerting no action on the urinary organs. The use of methyl iodide is indicated in place of cantharides in all cases, especially when an energetic vesicant is required. In applying methyl iodide for this purpose from 15 to 30 grains of the liquid, the quantity depending on the area to be blistered, are poured upon a double fold of bibulous paper cut to the desired size. The paper is then applied to the skin which has previously been well washed with soap. Over this is placed a piece of gummed taffeta (*taffetas gommé*) a little larger than the paper, and lastly a layer of cotton-wool moistened at the edges with collodion to keep the epidermis in position. The dressing may be removed at the end of two or three hours or it may be retained in position for from 16 to 24 hours. Blisters appears from three to 18 hours after the application of the dressing and resemble those produced by cantharides.

MINERS AND EXPLOSIVES.

AT the recent Glamorgan assizes a collier was charged with the manslaughter of his wife and others in singular circumstances. Coming home from a night-shift he placed cartridges of gelignite, used by him in his work, in the oven. This apparently was done with a view not so much of drying them as of keeping them warm, for the evidence showed that the men were in the habit of carrying their supplies of gelignite inside their clothes to prevent them being affected by the cold. The prisoner had, no doubt, been accustomed only to see gelignite exploded by concussion and knew that heat to a moderate extent would not ignite it. As, however, he left it in the oven without telling anyone, and his wife probably did not know that it was there, it may be conjectured that she made up the fire and converted the oven into a very warm receptacle for such an article. At all events, some time after the man had gone to bed upstairs an explosion took place which wrecked the house and killed his wife, his two children, and a lodger. The charge of manslaughter was based upon the prisoner's negligence as shown by his conduct, but the evidence apparently proved that there was nothing improper, according to the rules under which he obtained it, in his possession of the explosive after his return home, and it could not be shown that he had such knowledge of its properties as quite clearly ought to have been imparted to all workmen intrusted with so dangerous a material. It may well be understood that the Lord Chief Justice felt the difficulty of rendering a man criminally liable for an act probably due to stupidity and ignorance and the jury who acquitted the prisoner no doubt felt sympathy with one who had had so terrible a lesson. It is, however, to be hoped that a repetition of such an occurrence will be made impossible so far as precaution can so render it, as miners, even when well aware of the dangers which their acts will cause, are sometimes reckless of the death and injury which their want of reasonable care may inflict upon themselves and others.

THE ARMY MEDICAL RESERVE.

THE War Office states that it is impossible to maintain in times of peace the whole of the medical *personnel* necessary for an army in the field and it has therefore been determined to deal with the deficiency in the medical officers required by the formation of an Army Medical Reserve, subject to the rules that govern the employment of reserve officers generally. It is proposed to commission young medical men in the Army Medical Reserve, the rank on joining to be that of lieutenant with promotion to captain after three and a half years' satisfactory service. A practitioner joining the reserve would have to undergo a course of training and instruction at the depôt of the Royal Army Medical Corps at Aldershot, during which time he would receive the pay and allowances of an officer of his rank in the Royal Army Medical Corps. If this probationary period of service were satisfactory he would be confirmed in his rank and receive in his second and third years a retaining fee of £20 per annum. He would then be called upon to undergo another course of instruction preparatory to passing the examination necessary for promotion to the rank of captain, and during this course, the duration of which would be one month, he would be paid as before. After promotion the retaining fee would be increased to £25 per annum. It is intended to limit the period of service in the reserve to seven years, as it is thought that after that time practitioners would not care to incur the general liability of reserve officers to serve at home or abroad in time of emergency. Reserve officers would be able to resign their commissions under the usual conditions.

A DELICATE TEST FOR BILE PIGMENTS.

Dr. Anton Krokiewicz of Cracow records in the *Münchener Medizinische Wochenschrift* of March 13th his extended experience of a delicate test briefly described by him some years ago,[1] which he strongly recommends for clinical use. For its performance three solutions are necessary—viz., a 1 per cent. solution of sulphanilic acid in water which he calls solution A, a 1 per cent. solution of sodium nitrite distinguished as solution B, and pure concentrated hydrochloric acid. Solutions A and B should be kept in bottles of coloured glass to protect them from the light. An equal quantity of each of these two solutions is poured into a test-tube and the mixture is well shaken. One or two drops of the mixture are taken and mixed with

[1] Wiener Medicinische Wochenschrift, No. 8 1898.

the same quantity of the fluid to be tested, diluted considerably if any quantity of the pigment is present. The mixture becomes ruby red in colour after shaking for a few seconds. On adding a few drops of hydrochloric acid and diluting many times with water the colour changes to amethyst violet. This colouration is very distinct and very permanent. It is, moreover, with difficulty extracted from an acid solution; chloroform, ether, and carbon disulphide do not serve to effect this, while only traces are dissolved by amyl alcohol. The colouring matter gives no characteristic spectroscopic appearances. The test serves only to demonstrate the presence of bilirubin or slightly oxidised bile pigments. It is not given by the urine after administration of chrysophanic acid (senna and rhubarb), santonin, copaiba, tannin, antipyrin, phenacetin, naphthol, salicylic acid, bromides, iodides, or quinine. It is not given by indican in the urine nor by those factors upon which Ehrlich's diazo reaction depends. Comparative tests with various dilutions prove this test to be more delicate than those of Gmelin, Brücke, Fleischl, Rosenbach, Smith-Maréchal, and Rosin. It is given by ox-bile with a dilution of 1 in 500 very distinctly, whereas control tests with iodine or impure nitric acid give a positive result only down to a dilution of 1 in 200. It has the further advantage of requiring only a very small quantity of the fluid to give definite results.

THE Royal Hungarian Government has authorised the Hungarian delegates to the Fifteenth International Congress of Medicine at Lisbon to invite the Sixteenth Congress to meet in 1909 in Budapest. The Hungarian Government has allowed a sum of 100,000 crowns towards the expenses and a similar sum has been voted by the General Assembly of the capital, Budapest. The invitation will be given by the President of the Hungarian committee, Mr. L. de Tóth, councillor in the Ministry of Education.

AT the meeting of the Incorporated Society of Medical Officers of Health to be held on Friday, April 6th, at 1, Upper Montague-street, Russell-square, London, W.C., Dr. John Robertson, medical officer of health of the city of Birmingham, will read a paper, illustrated by lantern slides, upon Some Aspects of Housing Reform in Germany. The chair will be taken by the President, Sir Shirley F. Murphy, at 7.30 P.M.

THE death is announced of Sir Charles Buckworth-Herne-Soame, Bart., M.R.C.S. Eng., J.P., at the age of 76 years. He was the ninth baronet and succeeded to the title in 1888. He studied medicine at St. Bartholomew's Hospital, London, and qualified as M.R.C.S. Eng. and L.S.A. Lond. in 1854, subsequently practising at Dawley, Shropshire.

THE festival dinner of the Royal National Hospital for Consumption, Ventnor, Isle of Wight, will be held at the Whitehall Rooms of the Hôtel Métropole, Northumberland-avenue, London, W.C., on Tuesday, April 3rd, at 6.30 for 7 o'clock P.M. The chairman will be Field-Marshal the Right Hon. Earl Roberts, V.C., K.G., &c.

THE annual oration of the Medical Society of London will be delivered on May 21st by Professor Kocher of Berne and will be entitled "Some Contributions to the Pathology of the Thyroid Gland."

IN consequence of persistent ill-health following an operation infection Mr. A. M. Sheild has been granted leave of absence from St. George's Hospital for 12 months and will devote that time to taking a complete rest.

THE death is announced on March 28th of Dr. Lionel Smith Beale, F.R.S., emeritus professor of medicine in King's College, London, and consulting physician to King's College Hospital, at the age of 78 years. We shall publish an obituary notice of this distinguished physician and man of science in an early issue.

EPSOM COLLEGE.

THE prospectus of Epsom College which we print on pages 16, 17, 18, and 19 of our advertisement columns, will serve to remind our readers of the great educational advantages which are offered to their sons at a moderate fee and we trust that it will be the means of removing the idea which still exists in some quarters that the school is exclusively for the sons of members of the profession. In order to remove this false impression as far possible the title of the College was altered to its present one in the year 1903, under an amending Act of Parliament. All who are closely associated with the College are well aware of the fact that it was not the intention of the founder, Mr. John Propert, to create a class school, his object being to enable medical men to obtain a public school training for their sons at as near prime cost as possible. When a rumour was circulated soon after the foundation of the College that it was to be exclusively for the sons of members of the profession, owing in all probability to the term "medical" which was a part of its original title, the authorities requested us to contradict the statement which we did in the following terms:—

> It has gone abroad as an objection to the scheme that the school will not only be exclusively for the sons of medical men but for those sons only who are intended for the profession. The idea is monstrous. We have authority for stating that the school will not be confined to the sons of medical men but the foundation will be exclusively for the orphans and sons of distressed members of our own profession, whatever be their future destination, and that they will be educated in a manner to fit them for first-rate mercantile pursuits, Government offices, or any of the professions or respectable trades.

That this ideal of the founder and of the first council has been carried out is shown by the register of old Epsomians which has recently been issued. In this will be found the names of old pupils who have risen to eminent positions in the Church, the law, and in other professions; in the army, naval, and civil services, and in commerce; but special mention must be made of the places which have been taken in our own profession, one gratifying feature being that no fewer than 12 old Epsomians at present hold important positions on the staffs of some of the leading London hospitals.

The College is situated in a very healthy and bracing position high up on the Epsom Downs, the buildings standing in an estate of over 80 acres. The drainage system and the sanitary arrangements are practically perfect, for the very large sum of £8000 has been expended during the last year or two in bringing these up to modern requirements, so that the College may be fairly said to be one of the best-drained schools in England. There is a detached infirmary containing about 40 beds which has a competent matron, the whole of the washing is done in a laundry on the premises in order to prevent the inroad of infectious disease, and attached to the laundry is a room for drying wet clothes and flannels. The water is drawn from a well sunk in the chalk, an analysis of which shows it to be of a high degree of purity. There is a chapel providing 380 seats and there are a valuable library, three laboratories—chemical, physical, and biological—a lecture theatre, a carpenter's workshop, a gymnasium, a swimming bath (which was recently enlarged and improved at a cost of £1000), and several good fives courts. All junior boys are educated in the lower school which is quite distinct from the hostel and has a separate headmaster and matron; thus these boys are kept entirely separate from the main body of the school both for work and games. Science is taught in all forms, beginning with the elements in the lower school. Recently the College was inspected under the Board of Education, when permission was obtained to send in candidates for leaving certificates qualifying for the army, thus enabling boys to be prepared for Woolwich or Sandhurst.

Junior scholarships of £30 are offered every year, in the month of March, and there are ten "Council exhibitions" for sons of less fortunate members of the profession, the holders of which pay only 35 guineas a year instead of the

usual fee of 65 guineas charged to sons of medical men. Those not sons of members of the profession pay 75 guineas a year. Day boys are charged 25 guineas and the council has recently given greater facilities for their attendance, with the result that they do not now attend the College until 9 A.M. and they are enabled to return home by the 6.27 train from the Epsom Downs station. The founder's scheme provided for the admission of a large number of day boys but, owing in all probability to the inconvenient hours of attendance hitherto in force, the number in the school has not been large.

During the past 12 years the educational successes have been numerous. 24 open scholarships at the Universities of Oxford or Cambridge have been gained; 155 boys have passed the matriculation examination of the University of London, the majority being placed in Divison I.; 45 boys have passed the preliminary scientific examination for the degree of M.B. of the University of London and 44 have passed a portion of that examination; 93 higher certificates of the Oxford and Cambridge schools examination board, with 23 distinctions, and 319 lower certificates, have been obtained; and 93 boys have won certificates for drawing in the South Kensington art examination. In recent years a boy gained the thirteenth place at Woolwich direct from the College and passed into the Royal Engineers sixth on the list. These records must be considered exceedingly satisfactory in view of the fact that there are only 240 boys in the College.

The most optimistic person could hardly have imagined that within the short space of half a century the scholars of comparatively so small a school would regularly win two open scholarships a year at the Universities of Oxford or Cambridge, and that in addition to the boon of obtaining a sound education at a moderate fee, the sons of medical men would have the benefit of a very large number of exhibitions and scholarships on leaving the College. It has only to be added that in the earliest days of the school Her Majesty Queen Victoria graciously gave her patronage, that his present Majesty the King has not only continued that patronage but in 1895 showed his interest by laying the foundation stone of the lower school, and that so recently as in 1903 His Royal Highness the Prince of Wales paid a visit to the College and expressed himself as much pleased with all he saw.

MEDICINE AND THE LAW.

Action against a Medical Man: Tughan v. Darnell.

AT the Belfast assizes on March 19th, 20th, and 21st was held a trial which well illustrates the uncertainties of the law. It was brought by Alfred E. Tughan through his father, George Tughan, against Mr. Charles K. Darnell of Bangor, county Down, to recover £250 for personal injuries alleged to have been sustained by reason of negligence on the part of the defendant while attending him as a medical man. The case had previously been tried twice at the County Antrim assizes. On the first occasion the jury disagreed and on the second they found a verdict for the defendant. Against this decision the plaintiff appealed to the Court of King's Bench on the ground of misdirection on the part of the judge which that court refused to entertain. The next appeal was to the Court of Appeal which sustained the view that there was a misdirection on the part of the judge who tried the case and a new trial was granted. The judge who presided at the first two trials was the Hon. Mr. Justice Wright, judge of the High Court; while in the recent trial the presiding judge was Lord Chief Baron Palles, when a verdict was given for the plaintiff. Shortly and briefly the facts are as follows. The plaintiff, a youth, now over 19 years of age, suffered prior to Easter, 1904, from mumps, and going to Groomsport, a village on Belfast Lough, near Bangor, to recruit he was seized with orchitis. On April 4th (a Monday) Mr. Darnell was asked to see the boy, and according to the evidence for the plaintiff he recommended the use of a splint or, failing that a pillow or cushion, explaining how it should be made or used, and he also wrote two prescriptions: the first, a mixture, was to be taken internally every four hours; and the second, which was for external application, was composed of belladonna liniment and soap liniment in equal parts and the instructions were, "To be applied as directed," with half a pound of absorbent wool and half a yard of lint. He told the friends, as alleged, to "keep the lotion sprinkled on lint and I will be out on Thursday morning (April 7th). Lay it over the part and continue the treatment until Thursday morning." The cushion was made, the liniment was applied, and on the following morning the flesh was blistered and inflamed, and notwithstanding this the liniment was still applied. On the morning of April 6th the boy was so ill that his father went early to Bangor for Mr. Darnell, but the latter was away from home and his wife promised to send Mr. R. L. Moore of that town. Later in the day the father having gone to his business in Belfast telephoned to Mr. Moore who replied that he knew nothing about the case. Mr. E. A. Kirkwood of Belfast, an uncle of the boy, was then sent down from Belfast and on arrival at Groomsport he found that the boy had been seen by Mr. J. Gorman of Bangor who had been sent by Mrs. Darnell when she could not get Mr. Moore. Mr. Gorman found the boy suffering from belladonna poisoning and on his return to Bangor he telephoned to Mr. Darnell who had now come home and who at once went to see the patient. The boy's friends then dismissed Mr. Darnell and placed the boy in the care of Mr. Gorman who on April 7th asked Dr. W. B. McQuitty of Belfast to see the case with him and in two more days the boy was out of danger. For the defence Mr. Darnell said in his evidence that he told the father the essential thing was that the affected part should be elevated and supported, but made no reference to a pillow or cushion, and should there be pain some of the lotion ordered was to be sprinkled on a piece of lint and laid on the part affected. Two prescriptions were ordered—one for internal and the other for outward use. He also said that if the boy did not progress favourably, as he was going out of town would they get Mr. Moore or any of the other Bangor medical men, and his last words to the father were: "If you want any help you have not very far to go." He denied having mentioned anything about continuing a certain treatment until the Thursday morning, as alleged. In a word, the plaintiff's case was that Mr. Darnell was negligent in not explaining to the friends the nature of the liniment and the care which they should exercise in its use, while for the defendant it was claimed that full and complete directions were given but that through the improper and ignorant carrying out of the directions all the trouble arose. Medical evidence was given in support of the directions given by the defendant and as to the usual practice of the profession; but two of the witnesses admitted in cross-examination that it would be prudent to caution people to use care in the application of belladonna liniment. The jury answered a number of questions left to them in the plaintiff's favour and assessed the damages at £65. It was intimated that there would be an appeal on the ground of misdirection.

Fire Precautions Disregarded.

At the North London police court recently Mr. D'Eyncourt inflicted a fine of £36, with £3 3*s.* costs, upon a defendant named Schroder, managing director of some steam joinery works, for neglecting to comply with an order to provide means of escape from fire. That the penalty was not undeserved will be understood from the fact that on the three upper floors of the premises complained of 60 male workpeople were employed, ascending and descending by means of ladders only, unless they preferred to avail themselves of the hoisting chain. The order made had been for an iron staircase at one end of the building and the excuse was put forward that the place might probably be sold before long. Mr. D'Eyncourt declined to adjourn the hearing until August on this account, observing that all might be burnt to death by then if he did so.

A WORKHOUSE INQUIRY.

ON March 15th the Wandsworth board of guardians had before it the report of a special committee appointed to inquire into the circumstances attending the death of one George Crooks, an inmate of St. James's branch workhouse. Crooks died on Feb. 12th. An inquest was held by Mr. J. Troutbeck who mentioned that he had received a "round robin" signed by a number of inmates. This document alleged that the deceased had not been properly attended to. The evidence went to show that the deceased met with a

slight accident while carrying a tray. Mr. A. E. Dodson, the medical officer of the workhouse, was communicated with by telephone and as the case did not appear serious he telephoned instructions to the assistant master in charge of the institution. Mr. Dodson afterwards visited the patient. At the inquest Dr. Freyberger said that the man died from peritonitis and he expressed the opinion that an operation might have given a chance of life. Mr. Troutbeck communicated with the Local Government Board which directed the guardians to hold an investigation and to send a report "with observations thereon" (if any) to Whitehall.

It was stated that the special committee, with Canon Curtis (chairman of the board of guardians) presiding, had gone very carefully into the matter. It had held two sittings and had interviewed a number of officers and inmates. The following statement had been laid before it by Mr. Dodson:—

The number of inmates admitted to the workhouse yearly is between 7000 and 8000. In addition to these about 5000 tramps pass through the casual ward. For the disposal and treatment of all admissions and of the sick among the casuals I am responsible and I am sent for at any and all times. In the case of death among the ordinary inmates or casuals the fact is always reported to the coroner and an inquest is held. During the 20 years I have been medical officer 17 inquests have taken place. A few months ago Mr. Troutbeck, at an inquest, stated that he was "surprised at the way Dr. Dodson did his work." This was re the case of a little child found by the police one evening and afterwards brought to the workhouse. I was not called at the inquest or I could have informed the coroner, first, that though the child was found in the evening it was not brought to the workhouse until nearly midnight. Secondly, that if the child was ill the police-surgeon should have been called in and the child taken to the infirmary, which was passed on the way to the workhouse. Thirdly, that I am not resident and not having been sent for by the master I knew nothing of the case until my usual visit at 9 next morning. Mr. Troutbeck's charge against me was that I ought to have examined the child "directly it was admitted." How I was to know it had been admitted he did not think it necessary to state, although it would have been interesting under the circumstances.

The "observations" which the committee decided to make were as follows:—

(a) Your committee do not think that any great blame can be attached to the medical officer, as his telephone answer to the assistant master, saying that he would come if the patient was not better, and that he (the doctor) was the first to inquire per telephone on the Sunday morning how the deceased was, evidently shows that he was not unmindful of the case.

(b) Your committee while making allowance for the fact that the assistant master, possibly from ignorance of the state of the man's health, did not realise the serious condition that the deceased was in, they still feel that considerable blame attaches to him for not having given more personal attention to the matter.

It recommended that the wife of the assistant master should be designated "assistant matron" in order that she might take charge in her husband's absence, the office of assistant matron to be an honorary one. Further, the committee recommended:—

That considering the distance that Dr. Dodson resides from St. James'-road branch workhouse your committee are of opinion that it would be advisable if Dr. Dodson could make arrangements with some practitioner living near the establishment to visit in cases of emergency.

These recommendations were adopted by the board and it was decided to report fully to Whitehall. In announcing the appointment of a medical officer for the Balham district the chairman said it was the desire of the board that the poor should receive the same care and consideration as the rich.

GARDEN CITIES.

THE Garden City Association held a conference on March 16th at the Criterion Restaurant, London, Mr. JAMES BRYCE, M.P., Chief Secretary for Ireland, being in the chair. The objects of the association, as we mentioned in THE LANCET of March 24th, p. 844, are to promote the relief of overcrowded areas and to secure a wider distribution of the population over the land. This it strives to do by advocating and assisting in the establishment of garden cities, such as Letchworth, designed from the outset to secure healthful and adequate housing for the whole population. The address of the secretary is 345, Birkbeck Bank Chambers, London, and the honorary treasurer is Dr. Arthur W. James, 69, Gloucester-terrace, Hyde Park, W. An annual subscription of 5s. or upwards constitutes membership and the association appeals to all who are desirous of improving by constitutional means the present physical, social, and industrial conditions of life in town and country.

Mr. BRYCE, in opening the conference, entered fully into the whole subject. He said that towns in the United Kingdom were growing too large and it was necessary to check the increase. That, in short, was the object of garden cities. Not only in London but in other places the problem had become most urgent. In South-East Lancashire, for instance, the towns were growing at such a rate that it was rapidly becoming practically one great town, 30 miles long by some ten miles wide. The practical lesson he wished them to learn was that by trying to plant communities such as Letchworth in well-chosen positions in the country an attempt should be made to deal with the problem. By that means new industrial centres or garden cities could be established with populations of about 50,000. He did not agree that unlimited population was a blessing and considered it was far more important that people should be happy rather than they should multiply. By carrying people long distances to and from their work enormous economic waste was involved and beyond that country life was better than urban life for the physical and moral conditions of the race.

An interesting paper was then communicated by Mr. R. NEVILLE, K.C., on Garden Cities as a Solution of the Housing Question, in which he discussed the difficulties and dangers that accompanied the excessive aggregation of the population. In England the development of mechanical industries had led to the aggregation of population in large towns not only in excess of that which had taken place elsewhere but at a time when experience was needed to indicate the evils which would result therefrom. The audience evinced a special interest in the comparison he made between the housing facilities that could be provided at Letchworth Garden City and those obtainable in London and its environs.

After many speeches a motion was adopted declaring that the housing problem could be solved and the congestion in crowded centres relieved by a concerted movement of manufacturers to new areas, arrangements being made for securing to the people the increased value which their presence gave to sites. The motion also advised that the areas should be carefully planned so as to make adequate provision for the individual and social needs of the people, especially with a view to secure for all time the combined advantages of town and country life.

Mr. H. RIDER HAGGARD described the change that had come over the life of the agricultural labourer within the last 30 years. He declared that the serious lack of housing accommodation for the labouring class would result in little less than a breakdown of civilisation and the problem was intimately associated with national deterioration. Mr. Rider Haggard's speech was followed by the adoption of a motion stating that the problem of the depopulation of rural districts could be much mitigated by the removal of manufacturing industries from crowded centres to garden cities.

The conference concluded with a paper read by Mrs. S. A. BARNETT on Garden Suburbs.

Public Health and Poor Law.

LOCAL GOVERNMENT BOARD.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

Borough of Guildford.—Dr. R. W. C. Pierce, in dealing in his current annual report with the subject of the joint isolation hospital which serves the boroughs of Guildford, Godalming, and Woking, as well as the Guildford rural district, states that during 1905 there were 23 cases admitted into the hospital which were found subsequently not to be suffering from the disease for which they were admitted. 17 of these cases were notified as scarlet fever and six as diphtheria. Dr. Pierce attributes the errors as regards scarlet fever to the prevalence of an uncommon form of German measles, while the "diphtheria" cases were cases of septic sore-throat. In none of these latter were "swabs" taken for bacteriological examination, although in three out of the four constituent districts such examinations can be made free of charge to the patients. Dr. Pierce suggests that when the diagnosis is uncertain the patient should be kept under observation for a day or two rather than

be removed at once to hospital. There is much to be said for this suggestion, more especially in cases where there is no resident medical officer at the hospital or where there is not an adequate provision of observation wards or of nurses. It is in our view desirable that no patients should be admitted directly from their homes into the wards set apart for the disease from which they are notified to be suffering. When there is a resident medical officer a patient obviously suffering from some other disease can be at once sent home without being admitted into the hospital but when there is no such officer there should be a sufficient number of observation wards to enable a patient to be isolated until seen by the medical officer of the hospital, who, if necessary, could confer with the notifying practitioner before sending the case to the wards. It would seem, however, that the legal responsibility for the notification certificate must rest with the person signing it.

City of Carlisle.—Since 1874 there have been several outbreaks of typhus fever in this city and as recently as last year there were 16 cases of the disease notified between April 19th and Oct. 13th. There seems to have been considerable difficulty in diagnosing the malady and certain of the earlier cases were regarded in the first instance as enteric fever. This is not matter for surprise, seeing how rarely typhus fever is now seen by medical practitioners or students. Mr. William Brown, the medical officer of health, is inclined to the view that the circumstances attending the Carlisle outbreaks suggest the *de novo* origin of the disease and among his reasons for this suggestion is the fact that in none of the various outbreaks which have occurred in Carlisle during the last 31 years has the origin from any pre-existing case been traced satisfactorily, a fact which is surely in no way remarkable having regard to the anomalous forms in which the disease is liable to present itself in these days. The Carlisle outbreaks have nearly all commenced in April in the old house property around Caldewgate and the Irish element has been always the first to be attacked. The ages of the patients ranged from six to 55 years.

Woking Urban District.—A new series of building by-laws has recently been drawn up for this district and in certain cases tile-hung timber framing is allowed for the external walls in upper storeys. Provision is also made for the paving of at least 100 square feet of the area in connexion with new buildings and also for the paving of existing yards or open spaces where the condition of such yards is insanitary. Dr. R. W. C. Pierce again draws attention to the fact that the by-laws with regard to the trapping of sink waste-pipes are not enforced in the district but that the practice of providing a large untrapped earthenware pipe is still allowed. Although these pipes are cut off by disconnexion from the drains the fact of their being untrapped constitutes a distinct nuisance in that the pipes form air inlets which are coated inside with decomposing animal and vegetable matter. The fact that they do thus act can be easily demonstrated by closing the doors and windows of the scullery and by holding a lighted match over the sink. Dr. Pierce does not state why it is that the district council thus allows its own by-laws to be disregarded.

Chelmsford Rural District.—The council of this district has recently had under consideration the important question of the housing of the agricultural labourers and as the result of its deliberation has expressed the view "that whilst acknowledging that in many parishes more cottages are required they are of opinion that the want would be met were the owners of real property to provide cottages for the occupation of the labourers employed thereon, and that it is the duty of the owners to provide such cottages rather than of a rural sanitary authority out of the rates. That Parliament should legislate to enable rural district councils to call upon owners to provide such cottages and to afford them facilities for so doing." Few will be prepared to deny the obvious proposition that if more cottages were erected the existing want might be met, but we imagine that many of the owners would gladly transfer to the district council their land and with it what, according to the rural district council, are their ethical obligations rather than to erect cottages for which they might not obtain an adequate return. Nor does it seem that the surveyor to the district council is able to hold out prospects of any very great returns to the landowners since the plans which he submitted to the last meeting of the housing committee estimated that cottages with three bedrooms could be erected in blocks of four at £150 per cottage, but this estimate did not include well, cesspool, fencing, or land—a fact which would bring the total cost up to about £200, and this in a district which is under the new rural by-laws. It is certainly doubtful whether in all the existing circumstances a landowner would care to invest money in this fashion. If, however, as Dr. C. J. Thresh states, the capital necessary were borrowed under the Housing of the Working Classes Act the cost of each cottage to the rural district council would be about £14 a year during the period over which the repayment of the loan was spread, and as Dr. Thresh contemplates that a rent of from 3*s.* to 4*s.* 6*d.* per week could be obtained the rates would be called upon to raise £4 18*s.* per annum for each cottage. He thinks that 200 houses would relieve all the overcrowding and an experiment of this magnitude could be made for £1000 per annum. At the end of 30 years the rents would, in his opinion, relieve the rates to a greater extent than they had previously burdened them and thus the investment would prove an "exceedingly remunerative one." The proposal is one which is well worthy of serious consideration from a health standpoint, but we doubt whether a prospectus issued to the public on these lines and headed "An Exceedingly Remunerative Investment" would bring about an embarrassing number of applications for shares, more especially when the public appreciated the fact that for the next 30 years both capital and dividend, and in addition the cost of repairs, would be a call upon their own pockets. The scheme would, however, provide healthy homes for a considerable number of persons who are now, we gather, living under unwholesome conditions, and it would thus make for that general physical fitness for which we are all at this juncture striving. Viewed from this standpoint we have little doubt that many of the ratepayers in the Chelmsford rural district would gladly take their share in the financial risk and we trust that Dr. Thresh will be able to develop the scheme.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In 76 of the largest English towns 8810 births and 4808 deaths were registered during the week ending March 24th. The annual rate of mortality in these towns, which had been 17·4, 16·7, and 16·2 per 1000 in the three preceding weeks, further declined to 15·8 per 1000 last week. In London the death-rate was 15·8 per 1000, while it averaged 15·9 per 1000 in the 75 other large towns. The lowest death-rates in these towns were 6·2 in Hastings, 8·4 in Willesden, 8·9 in Wallasey, 9·6 in Hornsey, 9·8 in Bury, and 9·9 in Walthamstow and in Reading; the highest rates were 19·1 in Coventry, 19·6 in Hanley, 19·7 in Newport (Mon.), 20·5 in Swansea, 20·8 in Plymouth, 21·6 in Liverpool, and 25·0 in Swansea. The 4808 deaths in these towns last week included 414 which were referred to the principal infectious diseases, against 420, 469, and 435 in the three preceding weeks; of these 414 deaths 147 resulted from measles, 121 from whooping-cough, 61 from diphtheria, 34 from scarlet fever, 27 from diarrhœa, and 24 from "fever" (principally enteric), but not any from small pox. No death from any of these diseases was registered last week in East Ham, Hastings, Bournemouth, Reading, Ipswich, Hanley, Grimsby, Wigan, Warrington, Preston, Barrow-in-Furness, or Tynemouth; while they caused the highest death-rates in Croydon, Handsworth (Staffs), West Bromwich, Liverpool, St. Helens, York, Newcastle-on-Tyne, and Rhondda. The greatest proportional mortality from measles occurred in Croydon, Hornsey, Tottenham, Bristol, Liverpool, Bury, Leeds, and Newcastle-on-Tyne; from diphtheria in Croydon, St. Helens, York, and Merthyr Tydfil; from whooping-cough in Plymouth, Handsworth (Staffs), West Bromwich, Smethwick, Coventry, Leicester, Gateshead, and Rhondda; from "fever" in St. Helens and Burnley; and from diarrhœa in Middlesbrough. The mortality from scarlet fever showed no marked excess in any of the large towns. No death from small-pox was registered during the week either in London or in any of the large provincial towns. The number of small-pox cases remaining under treatment in the Metropolitan Asylums Hospitals, which had been six, six, and seven at the end of the three preceding weeks, had further risen to ten at the end of last week; five new cases were admitted during the week, against one in each of the three preceding weeks. The number of scarlet fever cases in these hospitals and in the London Fever Hospital on Saturday last, March 24th, was 2434, against 2628, 2545,

and 2485 on the three preceding Saturdays; 234 new cases were admitted during the week, against 273, 268, and 252 in the three preceding weeks. The deaths in London referred to pneumonia and diseases of the respiratory system, which had been 343, 314, and 334 in the three preceding weeks, declined again to 320 last week, and were 18 below the corrected average number in the corresponding periods of the four preceding years. The causes of 59, or 1·2 per cent., of the deaths in the 76 towns last week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in West Ham, Bristol, Nottingham, Leeds, Newcastle-on-Tyne, and in 43 other smaller towns, while the largest proportions of uncertified deaths were registered in Birmingham, Coventry, Liverpool, St. Helens, Warrington, Blackburn, Sheffield, Middlesbrough, Sunderland, and Gateshead.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been 19·3, 18·2, and 19·3 per 1000 in the three preceding weeks, declined again to 18·0 per 1000 during the week ending March 24th, but was 2·2 per 1000 in excess of the mean rate during the same period in the 76 large English towns. The rates in the eight Scotch towns ranged from 12·6 in Leith and 15·1 in Perth, to 20·6 in Greenock and 22·8 in Dundee. The 617 deaths in these towns included 20 which were referred to measles, 17 to diarrhœa, 16 to whooping-cough, three to diphtheria, and one to "fever," but not any to small-pox or to scarlet fever. In all, 57 deaths resulted from these principal infectious diseases last week, against 61, 57, and 81 in the three preceding weeks. These 57 deaths were equal to an annual rate of 1·7 per 1000, which was 0·3 per 1000 above the mean rate last week from the same diseases in the 76 large English towns. The fatal cases of measles, which had been 26, 23, and 37 in the three preceding weeks, declined again last week to 20, of which 14 were registered in Glasgow, three in Edinburgh, and two in Dundee. The deaths from diarrhœa, which had been 14, seven, and 20 in the three preceding weeks, declined again to 17 last week, and included eight in Glasgow, three in Dundee, two in Edinburgh, and two in Aberdeen. The fatal cases of whooping-cough, which had been ten, ten, and six in the three preceding weeks, rose again last week to 16, of which nine occurred in Glasgow, three in Dundee, two in Edinburgh, and two in Greenock. The deaths referred to diseases of the respiratory organs in these towns, which had been 125 in each of the two preceding weeks, increased last week to 128, but were slightly below the number in the corresponding period of last year. The causes of 16, or nearly 3 per cent., of the deaths registered in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 24·8, 24·6, and 23·1 per 1000 in the three preceding weeks, rose again to 25·6 per 1000 during the week ending March 24th. During the past four weeks the death-rate has averaged 24·5 per 1000, the rates during the same period being 16·3 in London and 16·7 in Edinburgh. The 186 deaths of persons belonging to Dublin registered during the week under notice were 18 in excess of the number in the preceding week and included four which were referred to the principal infectious diseases, against six, six, and ten in the three preceding weeks; of these, three resulted from diarrhœa and one from diphtheria, but not any from small-pox, measles, scarlet fever, whooping-cough, or "fever." These four deaths were equal to an annual rate of 0·6 per 1000, the death-rates last week from the principal infectious diseases being 1·5 in London and 1·1 in Edinburgh. The three fatal cases of diarrhœa corresponded with the number in each of the two preceding weeks. The 186 deaths in Dublin last week included 30 of children under one year of age and 64 of persons aged 60 years and upwards; the deaths of infants showed a slight decline from the number in the preceding week, while those of elderly persons were considerably in excess. Five inquest cases and four deaths from violence were registered; and 72, or nearly two-fifths, of the deaths occurred in public institutions. The causes of six, or more than 3 per cent., of the deaths registered in Dublin last week were not certified.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Fleet Surgeon C. G. Matthew to the *Monmouth*, on recommissioning. Staff Surgeons: W. E. Marshall to the *President*, additional, for three months' study at West London Hospital; J. K. Robinson to the *Niobe* and J. W. W. Stanton to the *Suffolk*, both on recommissioning. Surgeons: R. Willan to the *Monmouth*, on recommissioning; L. C. Hunt to the *Suffolk*, on recommissioning.

The undermentioned Surgeons have been promoted to the rank of Staff Surgeon in His Majesty's Fleet:—Hilary Charles Arathoon (dated May 16th, 1902); Samuel Henry Facey (dated Nov. 29th, 1905).

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel W. Babtie, C.M.G., V.C., on vacating his appointment as Assistant Director-General, A.M.S., will be succeeded by Lieutenant-Colonel J. M. Irwin. Major J. C. Morgan succeeds Major A. R. Aldridge as Sanitary Officer, Eastern Command, India. Under the direction of Lieutenant-Colonel R. H. Firth a school of hygiene has been formed at the Depôt at Aldershot, its object being to instruct the soldier in minor sanitation.

ARMY MEDICAL RESERVE OF OFFICERS.

Surgeon-Captain James A. Clark to be Surgeon-Major (dated March 3rd, 1906).

ROYAL ARMY MEDICAL CORPS (MILITIA).

Robert Arthur O'Donovan to be Lieutenant (dated March 24th, 1906). 3rd or South Battalion (Light Infantry): Captain Le Feuvre is seconded (dated Feb. 10th, 1906).

VOLUNTEER CORPS.

Royal Garrison Artillery (Volunteers): 1st Argyll and Bute: Andrew Currie to be Surgeon-Lieutenant (dated March 24th, 1906). 2nd Lancashire: Harry Armitage Robinson to be Surgeon-Lieutenant (dated March 28th, 1906). 3rd Durham: Surgeon-Major James Drummond to be Lieutenant-Colonel and to command under the conditions of paragraph 47, Volunteer Regulations (dated March 24th, 1906).

Royal Engineers (Volunteers): 1st Devonshire and Somersetshire: Leonard Robert Tosswill to be Surgeon-Lieutenant (dated March 24th, 1906).

Rifle: 7th Volunteer Battalion the Royal Scots (Lothian Regiment): John Frank Crombie (late Captain) to be Surgeon-Lieutenant (dated March 24th, 1906). 1st Volunteer Battalion the Buffs (East Kent Regiment): Surgeon-Lieutenant E. G. Moon resigns his commission (dated March 24th, 1906). 1st Volunteer Battalion the Royal Welsh Fusiliers: Jonas William Anderson to be Surgeon-Lieutenant (dated March 24th, 1906). 2nd Volunteer Battalion, the South Staffordshire Regiment: Surgeon-Lieutenant C. S. S. Rigby resigns his commission (dated March 28th, 1906). 1st (Hallamshire) Volunteer Battalion the York and Lancaster Regiment: Christopher Addison (late Captain) to be Surgeon-Lieutenant (dated March 28th, 1906).

ROYAL ARMY MEDICAL CORPS (VOLUNTEERS).

North East Lancashire Bearer Company: Alexander Callam to be Lieutenant (dated March 28th, 1906).

THE ORGANISATION OF THE ARMY AND THE ARMY MEDICAL RESERVE.

Neither in the various articles on army organisation which have appeared in the daily press nor in the debates in Parliament on the army estimates has the medical aspect of the question received any attention. And yet a little consideration will show that it has a very important bearing on what is to be our army organisation in the future. As everyone knows, the real or alleged failure of our medical and sanitary service in war is a frequent source of complaint, leading to much crimination and recrimination, and usually

leaving behind a keen sense of injustice on the part of the service concerned. It is needless to cite examples in illustration of a well-known fact. What now directly concerns us is that no one seems to realise the great and growing magnitude and difficulty of the task of having to provide the amount of medical aid required for a really big war. It was with that aim in view that we long ago ventured to suggest that it might be possible to have an Imperial medical service. In the case of this country it must be borne in mind that we are not only dealing with the requirements of the United Kingdom but with those of an empire. It is a somewhat curious and significant coincidence that synchronising with the occasion of the War Minister's first speech in the House of Commons there appeared for the first time a historic blue-book in the shape of a census of the British Empire.[1] This wholesale attempt at "numbering the people" was the conception of Mr. Chamberlain when Secretary for the Colonies. Its publication serves to show how enormous are the material forces that are potentially available for the purposes of Imperial defence and for the organised unification of an Imperial medical service as an integral part thereof. It cannot be beyond the power of some statesman to devise some bold and big scheme which shall prove acceptable to all concerned and also have the effect of more closely binding together the various colonies and dependencies and the mother country. This might well form a subject for the consideration of the colonial delegates at their meeting in this country next year. Notwithstanding all the attempts that have been made and the various measures that have been adopted from time to time, these have hitherto all been of a more or less tentative and provisional nature. We have shown but little originality and have been only too ready to follow slavishly in the footsteps of any military power, like that of Germany, for example, that may happen at the time to have been successful in war, regardless of whether their systems and methods were the best and most suitable to our insular conditions and national institutions, habits, and customs.

LORD ROBERTS'S REMINISCENCES OF THE SOUTH AFRICAN WAR AND ITS MORAL.

Lord Roberts gave an address on Imperial Defence at the Royal Institution on March 23rd, in which he strenuously urged his well-known views regarding the immense importance of training every able-bodied youth to the use of arms in order to provide the regular army with a strong and an effective reserve in time of need. This address was of a notable character for various reasons. It was decided and dignified in its tone as became the utterance of a great military authority who was evidently thoroughly in earnest and strongly impressed with the grave importance of what he was saying; moreover, it embodied an interesting personal statement and a summary description of the Boer war and of the lessons to be learned from it. We particularly call attention to what Lord Roberts said about the conditions that obtained in, and characterised, the late war in South Africa, which he set forth in his address in a very lucid and convincing way, because they are such as we particularly dwelt upon in the series of articles that appeared in this journal at that time. But these are matters which belong to the past, while what now so urgently concerns us relates to the dangers of unpreparedness and defeat in the future and to the words of warning with which Lord Roberts concluded his address. It cannot, we think, be denied that one of the ways to obtain a healthy and vigorous as well as a virile, intelligent, and self-respecting population is to give boys such an education as will imbue them with a spirit of patriotism and a sense of the duty which they owe to their country.

THE MEDICAL INSPECTION OF VOLUNTEER RECRUITS.

"With reference to the medical inspection of Volunteer recruits on enrolment (ordered before the general examination of last year)," the *Army and Navy Gazette* states, "instructions have been given to general officers commanding to take no further action in withholding capitation grant in respect to enrolled recruits who have been found not to conform to the physical tests. In announcing the Army Council's decision the War Office adds that the instructions ordering the examination are to be regarded as inoperative pending the issue of further instructions on the subject."

[1] Vide leading article, THE LANCET, March 17th, 1906, p. 768.

Correspondence.

"Audi alteram partem."

THE NATIONAL LEAGUE FOR PHYSICAL EDUCATION AND IMPROVEMENT.

To the Editors of THE LANCET.

SIRS,—The President of the Board of Education was kind enough to receive a deputation from this league on the 27th of last month. As some misapprehension on this matter seems to exist, may I be allowed, as chairman of the executive council, to say that the deputation went in the name of the league for the purpose of pressing upon the Government the importance of medical inspection of schools? This is understood to include the recording, at least once every year, particulars of height, weight, and chest girth of each child; the observation of the condition of the eyes, the ears, the nose, the throat, or the detection of any disease, deformity, or defect; and the employment of all means possible to remove the causes and prevent the diffusion of offensive or infectious diseases among children.

The deputation urged that inspection should be compulsory and under the control of the central authority. The deputation, though limited in number, was thoroughly representative in character. The two Members of Parliament who introduced the deputation, Mr. Compton Rickett (Liberal) and Sir Henry Craik (Conservative), are themselves members of our executive council. The deputation consisted besides of the Bishop of Southwark, who brought a letter of approval from the Archbishop of Canterbury; Sir Lauder Brunton, M.D. Edin., F.R.S., who is President of the second International Congress for School Hygiene; Professor Howard Marsh, F.R.C.S. Eng., of Cambridge; and Mrs. M. A. D. Scharlieb, M.S., M.D. Lond., representing Medicine and Surgery; Colonel Hendley, C.I.E., I.M.S.; and Miss Alice Ravenhill, well known for her wide experience in hygiene and education, besides the chairman and secretary. The Chief Rabbi and Mr. Commissioner Howard of the Salvation Army were to have been with us but were prevented at the last moment.

Mr. Birrell pointed out the difficulties arising from expense and from the possible prejudice of parents, but he expressed his own personal sympathy with our general purpose and his hope that the league would be able to win that support of public opinion which would justify action.

In our view this matter is one which requires only to be known and understood in order to be sure of wide public support. We plead that, as Professor Marsh so well pointed out, medical inspection would do much to banish such preventive ailments as measles, diphtheria, and scarlet fever, as completely as rabies has been banished by recent measures. We plead that the future of many children would be happier and more useful to society if, as a result of medical inspection, they were persuaded not to enter occupations for which they are physically unfit. We plead that our proposals would result in economy to the nation, for infantile ailments overlooked and neglected lead to waste of human power and, in the end, throw upon society the burden of supporting many whom kindly care might have saved. Prevention is more economical as well as "better than cure" and it is much more humane. Other countries have already led the way; there are 300 school doctors in New York, 130 in Paris, and as many as 8000 in Japan. The benefits to society and to the children are beyond doubt.

I am, Sirs, yours faithfully,

W. B. RIPON,
Chairman of the Executive Council of the National League for Physical Education and Improvement.

Denison House, S.W., March 21st, 1906.

ISOLATION OF ADVANCED CASES OF PULMONARY TUBERCULOSIS.

To the Editors of THE LANCET.

SIRS,—It may interest your readers to know that there has recently been opened near Northampton a hospital for the isolation of advanced cases of consumption occurring in the town. In addition a motion has been passed by the town council to retain at certain sanatoriums a few beds to

which consumptives in the early stage are to be sent. The hospital for advanced cases is a measure of prophylaxis which I have been advocating for a considerable period. I believe it marks a distinct advance, so far as this town is concerned, in the preventive measures applied to the disease. Some prejudice on the part of advanced cases to avail themselves of the facilities offered to them to remove the possibility of infection from their relatives has shown itself, but I have no doubt the experience of those in the hospital will remove this prejudice.

I am, Sirs, yours faithfully,

JAMES BEATTY, M.A., M.D.Dub.,
Medical Officer of Health of Northampton.

Northampton, March 19th, 1906.

THE GENERAL MEDICAL COUNCIL: ELECTION OF DIRECT REPRESENTATIVES.

To the Editors of THE LANCET.

SIRS,—You conclude your very able leading article on "The General Medical Council: the Approaching Election of Direct Representatives" with the intimation that "you will recur to the question of the reconstruction of the Council dictated by a reconsideration of the work it is intended to do." Will you kindly allow me shortly to mention my views on this subject, so important to the profession? First, as to reconstruction of the Council. I quite agree with your dictum "that the Council is becoming a somewhat unwieldy body, at once too small and too costly for the full discussion of many of the questions with which it deals and too large and too verbose for prompt and effective administration." So much have I felt this, until quite lately, that I contented myself with recording my vote in favour of obtaining one or more additional Direct Representatives without saying a word on the subject. I considered the principle absolutely right but I doubted as to the good result in practice if it were consummated as a fact. I believed the right way to get to work was by fresh legislation, lessening the whole number of representatives to some 16, and giving the profession the one half as their proper share of the total membership.

But, Sirs, 20 years' experience has quite convinced me that the laity, or at least the most influential portion of the public politically, believe, as you say, implicitly that medical education is of no importance. If this be so, what hope is there of an amended Medical Act? Consider what has been the fate of such a modicum of medical legislative relief as the Companies Bill and then can you expect for a moment that the bigger measure would ever pass into law, or rather, as a shrewd friend of mine prophesies, such a Bill might be introduced as a blessing and reversing the experience of Balaam emerge from Parliament as a curse to the profession. No, Sirs, that is not the way to gain any advantage. If this be so, what then? I say, go on increasing the number of representatives on the Council. But let the Council meet only once a year for logomachy—the ventilation and discussion of any and every subject interesting to the profession at large, and make it depute its real work to an executive committee of, say, ten, with powers to secure the necessary quorum under the existing Act. My proposal, in other words, is to make more use of the present Executive Committee, devolve more duties upon it, especially penal work, make it a sort of Cabinet with strong powers of action. Let it initiate little or nothing but be the instrument of the larger body and restrict the meetings of the latter to a single one in the year, with the understanding that it would finish its talk in a week. The result would meet your objections, and probably not cost more money, with a very much increased chance of doing good work. This, however, is after all a minor question of a domestic kind. What is to be done to give us our just place in the country?

I begin by positively asserting that our aim will not only not be attained but be hindered by attempts to secure direct political power. The country will never tolerate a doctors' party in Parliament. In spite of all that is being said to the contrary I am not sure whether it will even long submit to a Labour party pure and simple. Looked at in the proper light, all such combinations are in essence selfish, the opposite of patriotic, and deserve to come to naught. No, Sirs, the process of setting ourselves right with the public is by educating our masters. Having studied the question of true teaching with some attention and for a considerable period of time I have come to the clear conclusion that until science generally, and more especially the science of hygiene, gets its due place in the elementary school time table, we as a profession will continue to be too frequently misrepresented and misunderstood. It is dense, crass ignorance of the laws of health, tinctured with a strong infusion of innate superstition, and aided by the indiscriminate prescriptions of ill-understood drugs on our own part, which hinders the march of medical progress and relegates the profession to an unjust position in the country. And yet, after all, do not let us make too much of our troubles over quacks and unfriendly legislators; let us comfort ourselves when we read to-day in the columns of a newspaper so influential as the *Spectator*: "It is the ambition of prolonging life inspiring and purifying every decision he takes, strengthening the influence of his counsels to those who ask his advice, guiding his knife over the operating table, lightening the touch of his hand on children and women, that makes the physician's profession the noblest open to man."

I am, Sirs, yours faithfully,

March 26th, 1906. WILLIAM BRUCE.

ETHYL CHLORIDE AS A GENERAL ANÆSTHETIC.

To the Editors of THE LANCET.

SIRS,—I read with much pleasure Dr. Harold Mowat's letter in THE LANCET of March 24th and I cordially agree with what he says regarding the use of ethyl chloride as a general anæsthetic. I have used it frequently during the last two years and I have found it in every way most satisfactory. For many minor surgical conditions it is an ideal anæsthetic. Those who speak against it have either not given it an impartial trial or have investigated it in such a timid manner that its true value has not been fully demonstrated.

The manner in which I have been accustomed to administer it is precisely the same as that described by Dr. Mowat. The anæsthesia is so rapidly produced that one does not begin giving it until the surgeon is ready. The surgeon has, as it were, to stand by and to be ready to operate as soon as the patient is well under. In my experience after-effects have been conspicuous by their absence. To obtain this happy result preparation of the patient is, I think, essential, and neglect of this may account for disagreeable after-effects. It has always been my custom to make the patient take an aperient the night before and to abstain from taking food for three or four hours prior to the anæsthetic being given. If these precautions are taken the risk of after-effects occurring is infinitesimal. The chief disadvantage which I have met with has been the occurrence, in a few cases, of strong spasmodic contractions of the jaw muscles. This complication is more annoying than dangerous, as one often finds that by the time the mouth is opened the anæsthesia is passing off. Except in cases where it is necessary to separate the jaws to get at the part to be operated on this complication can be, practically speaking, ignored.

In dental work ethyl chloride fills a distinct want. I do not agree with those who maintain that it is unsuitable in such cases and assert that it is dangerous. I maintain, however, that it should only be given when the patient is in the dorsal position and not when the patient is in the sitting posture. Then I quite admit an element of danger comes in, this danger being to a large extent dependent on the great fall of blood pressure which occurs after it is inhaled. If administered when the patient is lying on his back the danger is not great. If a patient is got well under a quick and skilful dentist can easily remove from eight to 12 teeth. I have myself extracted six stumps under one administration and I do not profess to be an expert dentist. In these circumstances it is much superior to nitrous oxide. I do not, however, advocate its use by unskilled and unqualified persons, for it must be admitted that in the hands of such accidents may occur which would tend to bring it into discredit. The recent fatality has brought its danger prominently before the public, but I trust that this will not cause some medical men to discontinue its use nor prevent others from giving it a trial. It should have an extensive and unbiassed trial and if that were done I venture to predict that in the future its use would become almost universal. In the hands of qualified persons it is, in my opinion, a safe anæsthetic and it is a

reliable and an efficient substitute for chloroform or ether in minor surgical work.—I am, Sirs, yours faithfully,

Brighton, March 25th, 1906. J. ALLAN, M.B. Edin.

To the Editors of THE LANCET.

SIRS,—In an annotation in THE LANCET of March 3rd (p. 615) and in Dr. W. J. McCardie's paper[1] the use of ethyl chloride in dental practice is deprecated; Dr. McCardie, whose opinion on a question relating to anæsthetics justly carries so much weight, urges that it should only be given in "special cases." On the other hand, after a fairly long and large experience I have come to consider ethyl chloride to be the most convenient and suitable anæsthetic for dental extractions where one administration of nitrous oxide gas gives an insufficient period of anæsthesia for the operator to complete his work, and I would advocate its use "except" in special cases which I would define as cases where the patient has some obstruction to respiration or some serious heart disease. Dr. McCardie advocates extractions under gas at repeated sittings, considering *this* to be better for the patient than completing the work at one operation. Even if it be granted that gas is a safer anæsthetic than ethyl chloride, my experience teaches me that most people prefer—nay, will often insist—that the operation shall be completed at one sitting and dread the thought of having to go through the ordeal a second or third time as may be necessary if gas be given. In fact, I have known cases where it was proposed to clear the mouth in this manner refuse to submit to further sittings after the first. Where it is necessary that above half-a dozen teeth and stumps should be removed the only other alternative, practically speaking, is ether, and I think the advantage of ethyl chloride over ether for these short dental operations is beyond dispute. It is pleasanter to take, anæsthesia is rapidly induced, in a great majority of cases there are less ill after-effects, and supposing the operation to have been performed at the dentist's rooms the subject is able to leave in half an hour instead of occupying a room for half a day.

A few words on the method of procedure. I use an ether bag and face-piece connected by an L-shaped junction, attached to which and inside the bag is an open framework on which a piece of lint can be fitted. From three to five cubic centimetres of ethyl chloride are sprayed through an opening in the metal junction, which is closed by means of a small shutter. Air can also be admitted through this opening and the shutter revolved so as to close the opening into the bag. In this way the patient inhales pure air without removal of the face-piece. This L-shaped junction and shutter are made by Reynolds and Branson, Leeds. I always insist on dental patients being properly prepared for an anæsthetic as would be done for any surgical operation. Furthermore, I have the patient on a couch, if possible, and not in the dental chair.

For the past two years I have been in the habit of administering the ethyl chloride with a greater admixture of air, having previously used an Ormsby inhaler. And, like Dr. McCardie, I allow a breath of air as anæsthesia is being induced. The insertion of a prop between the teeth in all cases, dental or otherwise, I look upon as a valuable point and one for which I am indebted to Dr. McCardie. It allows the tongue to be brought forward immediately if there be a sign of respiratory difficulty. That the initial dose should not be too large is emphasised by a case of danger recently reported from Birminghan in which eight cubic centimetres had been given, and I agree with others that certain persons have an undoubted idiosyncrasy. If required more is easily sprayed into the bag. Should the patient "come round" before the operation is complete I mop out the mouth when signs of returning consciousness become manifest and give a further dose of the anæsthetic, which need never be so much as that given at first, when the second anæsthesia lasts longer than the first, thus contrasting favourably with gas.

Dr. McCardie in his paper to the Birmingham branch of the British Medical Association on Nov. 9th, 1905, disparages the use of ethyl chloride in dental work but in the same paper he advocates its use in minor surgery. Surely this is illogical, for is not extraction of teeth essentially an operation of minor surgery—as much so as the opening of an abscess or the extraction of an ingrowing toenail?

I fully appreciate that too much stress cannot be laid upon the dangers attendant on the use of so powerful a drug in the hands of the unqualified and incompetent, but is there not some danger of too great a swing of the pendulum and so of a most serviceable anæsthetic being unduly discredited?

I am, Sirs, yours faithfully,

RALPH A. LANKESTER,
Anæsthetist to the Bradford Royal Infirmary.

Bradford, March 28th, 1906.

[1] Brit. Med. Journ., March 17th, 1906.

THE ETHICS OF THE MEDICAL PROFESSION IN RELATION TO SYPHILIS AND GONORRHŒA.

To the Editors of THE LANCET.

SIRS,—I must apologise for once more trespassing upon your valuable columns in relation to the above subject but I feel it incumbent upon myself to answer Mr. Dudley Burney's last letter and to review his three contentions. The first of these states "that the danger to the health of the community by the spread of venereal disease was grossly exaggerated." This assertion does not fit in either with my own observations nor, so far as I have yet learned, with those of any of my professional brethren who have given thought to the subject. Nor would it seem that the members of the Committee on Physical Deterioration, many of whom, I understand, are adverse to a re-enactment of the Contagious Diseases Acts, share Mr Burney's expert views. For I take it that if they did so they would not have recommended an inquiry into the subject. Perhaps it may be that this body, after having digested the evidence which was tendered it, is still labouring under some delusion as to the grave and widespread effects of venereal diseases upon the population. Another solution is that it has been wrongly advised and the evidence tendered was worthless. Mr. Burney seems to think "that a lengthy list of the pathological phenomena and sequelæ of venereal disease" is quite unnecessary in order to demonstrate its prevalence and remarks "that we are not discussing the sequelæ of venereal disease but the relative amount of its incidence on the population at large." Such a statement only shows how differently two people may think. For personally I cannot dissociate the distant effects from the more immediate ones and should have thought that such a recapitulation, imperfect as it was, tended to show the widespread effects of these maladies. Many conditions which are euphoniously labeled under other titles than syphilis or gonorrhœa are in reality just as much part and parcel of the respective diseases as the initial symptoms thereof, and it is only by harking back to their primary, or determining, etiological factor that one can grasp the important part which these diseases play in the health of the nation. Most of the conditions which I enumerated are, if one excludes aneurysm, excessively common and I think that the logical deduction therefrom is, though Mr. Burney may not agree with me, that the spread of venereal disease has not been grossly exaggerated. I hardly think that statistics are absolutely necessary to prove such a statement which is, or rather should be, common knowledge amongst medical men who practise in towns or cities. I repeat that the great number of patients who daily seek advice for conditions which, though not actually called syphilis or gonorrhœa, are nevertheless the direct outcome of venereal infection points to the relative amount of its incidence on the population at large.

Mr. Burney remarks also "that venereal disease at the present day is less in quantity and severity than 100, or even 50, years ago." As regards the severity I quite agree, for disfiguring manifestations are comparatively rarely seen now. The reason thereof is probably to be found in the higher standard of medical knowledge of the present day, together with more correct diagnosis, which eliminates many conditions which were formerly thought to be syphilis, and also in improved treatment. But when we come to the assertion that venereal disease is less in quantity than it was either a half or a whole century ago I should be asking for convincing statistics in the same manner as Mr. Burney demands them from me. I might point out as regards army statistics that an apparent decrease does not necessarily mean a real one, for in former days, when interrupted treatment was in vogue, a patient might be admitted three or four times in a year for one disease and figure in the returns as a similar number of cases, whereas now that continuous treatment

for syphilis is the order of the day he remains a unit until his case is presumably cured. It is necessary to bear this fact in mind when comparing old venereal statistics with modern ones. We have not, so far as I know, any official records as to the prevalence of venereal disease *in the widest acceptation of the term* amongst our civil population. All opinion thereon must necessarily be restricted to individual observation of all cases which present themselves for various ailments through noting the proportion thereof which turn out to be intimately connected with either immediate or remote venereal disease. The calling of such cases by their locally descriptive names in no way alters their etiology, even if it masks it. I have just asked my friend Dr. Walter Tate if he could roughly compute the number of female patients who passed through his hands at St. Thomas's Hospital for ailments which could be directly attributed to venereal infection. His *mental* calculations were that 10 per cent. would fall short of the limit. Professor Herbert Spencer likewise thinks that 10 per cent. would not be an exaggerated estimate. Dr. F. W. Mott holds strong views upon the subject of general paralysis of the insane and estimates that syphilis may be either assumed or be proved to have existed in about 90 per cent. of all these cases. I must in justice point out that other observers do not concur in this heavy ratio. Dr. Mott likewise states in his paper on "Syphilitic Disease of the Brain" that from 20 to 25 per cent. of the male adults attending his out-patient department for "various diseases" have certainly been affected with syphilis, whilst a much greater number had suffered from some form of venereal disease. But, as he pointed out to me, his clinique savours somewhat of specialism and consequently tended to have a higher ratio of "syphilitics" than an ordinary medical one might show. Dr. Risien Russell thought that 10 per cent. would be a modest estimate of the number of all his patients at either University College or Queen-square whose various ailments could be traced as originating from former venereal infection. Dr. Percy Smith informed me that about 10 per cent. of male deaths in asylums were due to general paralysis. I do not think that anyone will contend that general paralysis is decreasing. If it were not for trespassing on your courtesy and space I could quote other valuable opinions which would tend to show that Mr. Burney's assertion as to "the danger to the health of the community by the spread of venereal disease being grossly exaggerated" is opposed to many other people's views and experience.

His second contention is, "That the suggested remedy having signally failed in those countries where it has been most rigorously enforced was thus of proved inefficiency." Mr. Burney, at the suggestion of a surgical friend, refers to Brussels as a glaring example of failure, and styles it the best regulated city in Europe. In the third report of the Advisory Board for the Army Medical Services one finds the following statement (see page 51): "VIII. Belgium, Brussels. Civil Regulations. Prostitutes are supposed to be registered and regularly examined; the regulations, however, do not seem to be very thoroughly carried out." This official statement does not quite tally with the laudation of Mr. Burney's prompter and, if we are to believe him, then all I can say is that the paragraph in question would seem to be maligning the city of Brussels. What about India? Are the Contagious Diseases Acts of proved inefficiency in that country? I must say that I did not glean such information in the pages of the above reports. I have not yet been persuaded, despite the Brussels Congress and Mr. Burney's eloquence, that all attempts to restrict the spread of venereal disease by putting it out of the power of a prostitute to propagate it are, or have been, futile. Take, for instance, the case of a prostitute who is known to be actively syphilitic and who nevertheless is having intercourse with two or three men daily—possibly a dozen a week. Is it not against common sense to say that a sanitary benefit would not be conferred upon the population by preventing her from following her occupation? The forensic mind may argue that it would not, but I venture to believe that all practically minded men would agree that it would. In justice to Mr. Burney's contention I must quote the following paragraph which appears upon page 2 of the final report of the Advisory Board: "Taking into consideration the present state of expert opinion abroad and the opposition certain to be raised in this country should the re-enactment of a statute on the lines of the Contagious Diseases Acts be proposed, the committee has come to the conclusion that in the United Kingdom, at any rate, an attempt to grapple with the problem of venereal disease by methods of compulsory isolation is neither practicable nor expedient." To my reading such an admission is one which expresses fear of public opinion rather than an unqualified confession as to the futility and sanitary failure of the Acts. Mr. Burney jeers at the suggestion that the restriction of the Contagious Diseases Acts to certain chosen localities carries with it the certainty of failure. Take the case of Woolwich. What good could have been expected by subjecting that locality to regulations when the immediately contiguous neighbourhood was uncontrolled? Was it giving the Acts a fair trial?

My opponent's third contention is "That not only was it [the Contagious Diseases Acts] futile but in addition was positively mischievous in that it brought into existence manifold evils far more baneful in effect than the evil it was destined to prevent." This statement must be regarded as somewhat of a party utterance, for there are people who like myself think that some of the evils have not only been exaggerated but were pre-existent to the birth of the Acts and still flourish notwithstanding their death. Mr. Burney ignores all the good effects, sanitary and otherwise, and dwells upon the evil ones alone. I presume he is aware that hundreds of women were not only cured of disease but likewise reclaimed during their isolation under these Acts. Moreover, there is good reason for believing that many a young girl was deterred from embarking upon a life of prostitution through their instrumentality. Mr. Burney waxes indignant at the proposition that any legal sanitary restriction should be advocated against the business of diseased whoredom. But many callings have similar drawbacks as to their conduction, particularly those which have a direct bearing upon the public health. In this country, where "white slavery" does not exist except on the same basis as its terminologically inexact Chinese prototype, the assumption of the occupation of professional prostitute is a purely voluntary one on the part of the individual. Much of the foreign element comes to our shores for the express purpose. Women are perfectly free to refrain from entering its ranks, or having done so and being dissatisfied with certain contingencies attached thereto they are at liberty to abandon the vocation. There are most estimable societies in this country which are burning to assist women to either end if they will but apply to them for help. Mr. Burney recommends "exercising the moral faculty." To do this it is first requisite that people must possess that commodity; the article in question is often one of which they have either never heard or cannot understand. The moral millennium has not yet arrived, nor do I think that it will do so until a new race of men and women with altered human natures people this earth. My plea is that, as we have failed to make them moral, we should endeavour to preserve their health in the hope that the coming generations of our race may present a smaller proportion of mental, physical, and moral degenerates which the permeation of a people by venereal disease tends to breed.

I am, Sirs, yours faithfully,

March 20th, 1906. CAMPBELL WILLIAMS.

AN OBSCURE CASE OF CEREBRAL TUBERCLE (?).

To the Editors of THE LANCET.

SIRS,—The inclosed notes of a case, which I should have diagnosed as influenzal but for the low temperature and the paralytic symptoms, may be of interest. It may be, however, a hæmorrhagic case, which is borne out by the retinal hæmorrhages. The cause is obscure, and the diagnosis of tubercle is made more on the whining cry and the absence of temperature than on the general grounds.

A child, aged 23 months, apparently healthy and well developed, suffered from constipation from March 10th to 17th. On the 13th a squint was noticed—lateral. On the 17th the fundi indicated optic neuritis and a suspicion of tuberculous meningitis was aroused but there was no history. There was slight bronchitis; the pulse and the temperature were natural. On the 19th the fundi were less red and the child had apparently improved. The bowels were regular and there was only slight bronchitis. On the 22nd there was partial ptosis of the left eyelid; both pupils were fully dilated and were insensitive to light. The fundi were red and there were small hæmorrhages. There were taches and

increased reflexes. The left apex was dull, the temperature and the pulse were normal, and the patient whined. On the 23rd there was complete ptosis of the left eyelid, the fundi of the eyes were as on the previous day, and the pupils were of medium size. The pulse was quick, the temperature was normal, the tongue was dirty and furred, and the child whined. The reaction of the pupils to light was slight and slow. On the 24th the left pupil was fully dilated while the right was of normal size; they reacted very slightly and slowly to light. There was ptosis and the abdomen was retracted. The child had been in a comatose state since the 22nd. There were taches and increased reflexes. The pulse was 160 and the temperature was 97·6° F. The child died at 10 A.M. on the 25th. No necropsy took place.

The absence of high temperature, the coma, and the nature of the paralysis led me to diagnose tubercle of the cerebral ventricle (third nerve nuclei). The parents and grandparents of the patient are alive and healthy.

I am, Sirs, yours faithfully,

Walbrook, E.C., March 26th, 1906. J. REID, M.D. Aberd.

THE ADMINISTRATION OF ADRENALIN IN CASES OF FAILURE OF THE CIRCULATION.

To the Editors of THE LANCET.

SIRS,—I was much interested in Dr. H. O. Butler's statement that he injected adrenalin *subcutaneously* and on successive occasions got a blood-pressure reaction. One or two other published cases would also seem to support his statement. On the other hand, I have made experiments on animals with adrenalin and with one or two slight exceptions have been unable to produce any effect upon the blood pressure by the *subcutaneous* injection of the drug. Dr. W. E. Dixon, in his paper on the Treatment of Internal Hæmorrhage by the Use of Drugs in THE LANCET of March 24th, p. 826, also states that the subcutaneous injection of adrenalin produces no effect upon the general circulation, and a similar statement has been made by Janeway and by Elliot, quoted in Dr. Dixon's paper. It would seem that in certain circumstances adrenalin will act upon the systemic blood-vessels when subcutaneously injected, but more usually it has no action. This is unfortunate, as from a clinical standpoint subcutaneous injection is much to be preferred to intravenous injection. Dr. Butler will find that the hemisine soloids of Messrs. Burroughs, Wellcome, and Co. afford a ready means of carrying adrenalin in a pocket case and the action of the drug is the same as the fluid extract of adrenalin. With regard to the meaning of the words "vaso-motor stimulant," it seems to me that action through the vaso-motor nerves or centres is necessarily implied. I am, Sirs, yours faithfully,

P. LOCKHART MUMMERY.

Cavendish-place, W., March 26th, 1906.

ABIOGENESIS AND HETEROGENESIS.

To the Editors of THE LANCET.

SIRS,—The leading article in THE LANCET of March 24th emboldens me to refer to Dr. H. C. Bastian's recently published "Nature and Origin of Living Matter." On p. 156 there is the following detailed description of an experiment in abiogenesis: "On Oct. 20th, 1890, a hay infusion was made by macerating two drachms of finely cut hay in ten ounces of tap water for four hours at 82° F. and the fluid was subsequently divided into two equal portions." So far I suppose Dr. Bastian agrees that organisms may be present. (*a*) "was simply passed through *one layer of Swedish filtering paper*. (*b*) was passed through a Chamberland filter. Each fluid was placed in a small *lipped* beaker to which one *drachm of tap water* was added; each beaker was then covered with a *circle of glass* and the two were left side by side on an incubator at a temperature of about 65° F." (The italics are not in the original.) (*a*) became turbid in 20 hours; (*b*) after several weeks torulæ and other fungus spores were found. It is not quite clear whether the growths in (*b*) developed in this particular experiment, but they frequently did so in other similar experiments.

Dr. Bastian does not state whether any control experiments were undertaken to show that (1) the layer of Swedish filtering paper was sterile; (2) that organisms or spores cannot pass through one such layer; (3) that the small lipped beaker was sterile; (4) that the drachm of tap water was sterile (it is not clear to me why this water was added); (5) that the circle of glass covering the beaker was sterile; and (6) that this circle of glass would effectually exclude all organisms from entering through the lip. In such lipped beakers as I have been enabled to examine a circle of glass would not prevent the passage of air, &c., into the beaker.

Dr. Bastian argues that the late appearance of the torulæ in fluid (*b*) denotes that the "germinality" of the fluid was destroyed, just as it is, he contends, when such fluids are subjected to such heating processes as employed by Tyndall and Pasteur. This "germinality"—i.e., the power of engendering organisms—is, I take it, altogether different, although Dr. Bastian does not explicitly say so, from the power of serving as food supplies to such organisms when once engendered. This latter power we know, of course, from daily experiments in bacteriological laboratories all over the world, is not altered by Tyndall's intermittent sterilisation (or laboratory modifications thereof).

From his experiments in heterogenesis Dr. Bastian concludes that "while more or less similarity would be likely to exist between the lower forms of life which have appeared at different periods of the earth's history, more and more divergence might be encountered amongst such higher aquatic or aerial types whose ancestors may have lived through long geologic ages." This is a conclusion which, arguing from different grounds, has the qualified assent of Professor Delage, who puts the position thus: "Les ressemblances entre les espèces s'expliquent par le fait que ces espèces et ces genres seraient issus des plasmas primordiaux peu différents à l'origine et auraient evolué dans des conditions assez semblables pour ne leur imprimer qu'une divergence moderée" ("L'Hérédité").

Dr. Bastian's criticism of Weismann would, perhaps, have gained in force had he taken notice of Driesch's[1] experiments on the fusion of two (or more) eggs of sea urchins; Herbst's[2] work on the development of sea urchins when chemical changes are made in the medium; and Loeb's[3] experiments in regeneration on hydroids, &c. Dr. Bastian is mistaken in thinking that Loeb considers his ova develop parthenogenetically by a *chemical* stimulant; his experiments were undertaken to prove that it depends upon a "physiologische gleichgewicht"—a physiological equilibrium of the solution.

I do hope that my remarks or criticisms will not seem captious. There must be a large body of unorthodox and unacademic persons who, like myself, are awaiting a new guidance but who will require to tread very cautiously.

I am, Sirs, yours faithfully,

Charlotte-street, W., March 26th, 1906. M. D. EDER.

[1] Die Verschmelzung der Individualität bei Echinidien Keimen, Archiv für Entwickelungsmechanik der Organismen, x.

[2] Experimentelle Untersuchungen, Mitteilungen von der Zoologischen Stelle, Neapel; also Archiv für Entwickelungsmechanik der Organismen, ix., 1900.

[3] Loeb's work is now collected in book form.

A BRISTOL GIANT.—On March 14th, while some workmen were engaged in excavations in connexion with an old Roman Catholic Church in Trenchard-street, Bristol, they discovered the coffin of Patrick Cotter O'Brien, a former well-known Bristol giant. The plate on the coffin read as follows: "Patrick Cotter O'Brien, whose name was Cotter, but he called himself O'Brien, whose stature was 8 feet 4 inches. He died on 8th September, 1806. Aged 46 years." It is stated that O'Brien had a great aversion to the showman and the anatomist, and in order to insure that his remains should be undisturbed after death he specially directed that his body should be so buried as to defeat "grave robbers." Accordingly his friends had a grave hewn in the solid rock, 12 feet below the surface, and until the workmen discovered the coffin nobody knew exactly where he was buried or if the body had been "snatched." Several of O'Brien's "relics" are preserved in the Bristol Museum—namely, his boots, gloves, &c. The curator of the Bristol Museum has taken the measurements of the bones and has promised to publish an account of them.

PORTUGAL OF TO-DAY.

(FROM A CORRESPONDENT.)

II.[1]

OPORTO.

THE city of Oporto (more properly spelt "Porto"), from which the name Portugal (Portus Cale of the Romans) is derived, is the second city both in size and commercial importance in the country. It is the only seaport of any importance in the North of Portugal, and owing to the difficulty or impossibility of navigating the bar of the river Douro in bad weather a large artificial harbour (the Port of Leixoes) has been built some two miles north of the entrance to the river, wherein ships of large tonnage can lie and discharge in almost any weather. The city itself, the population of which is over 172,000, is situated on the steep rocky banks of the Douro. It is decidedly picturesque and though it cannot compare with the capital as regards the magnificent harbour and fine buildings of the latter, yet presents many features of perhaps greater interest as being more uncommon and more primitive. The general aspect of the older part of the city would appear to have undergone very little change for a great number of years, but during the last two or three decades the town has extended very much and considerable improvements have been made both in streets and houses.

The town at present is a somewhat ill-assorted mixture of new and old, in the streets of which electric trams and the latest thing in motor-cars may be seen mixed up with a crowd of clumsy bullock carts that might have served as patterns for an Egyptian wall painting or transported provisions for a Roman army. Though several of the streets are broad and fairly good the roads in many parts of the town are so steep and so rough that horses are out of the question and bullock carts a necessity. Beyond the cathedral and one or two old churches there are few buildings of any great interest in the city, but the bright colours of the tiled walls of the houses, the picturesque costume of many of the people, the struggling bullock carts, and weird cries of male and female hawkers of all descriptions, combine to lend an air of interest to the streets that is necessarily absent in more modern towns. The greater part of the city lies on the north bank of the Douro and in former days was surrounded by very strong fortified walls, parts of which still remain and which, together with the natural defences of the place, rendered it a fortress of considerable strength. On the south side of the river, in the suburbs of Villa Nova, are situated all the wine "lodges," whither the port wine is brought from the "wine country" some 50 miles up the Douro and where it is stored till it is matured and ready for export. The chief feature of historical interest on this side is the Serra Convent, Wellington's headquarters when as Sir Arthur Wellesley he drove Soult and the French army out of Oporto in 1809.

The story of the passage of the Douro; of the discovery of the one boat which had been overlooked by the French and left on the south bank of the river; of the way the attacking party were ferried in it, 20 by 20, across a river nearly 300 yards in breadth, hidden by a bend in the river while the enemy were watching for them lower down; of the desperate tenacity with which they held the ruined convent while more boats were found on the north side and more men slowly ferried across; of Soult's hurried evacuation of the city to save his communications, his subsequent utter defeat and the disordered flight of his routed army into Spain, all this forms an episode in the history of the British army as remarkable for the successful audacity of its conception as for the brilliant gallantry and desperate valour of its execution.

THE ENGLISH COLONY IN OPORTO.

Though it was customary for English supercargoes to go out to Oporto before that date the first time any number appear to have gone to reside in the country was about the year 1654. Valuable concessions as regards the importation of woollen goods from England had been made by King John IV. of Portugal to Oliver Cromwell and the British Government, and a number of British merchants who went to Oporto to benefit by these concessions settled there and established for their mutual advantage a British association named, as was then the custom, the Factory House, a name that has been retained ever since. Though red wine from the North of Portugal had been sent in small quantities to England before there seems little doubt that the first use of real port wine in England dates from the time of Queen Anne when a preferential duty was allowed in favour of Portuguese wines as against those of France and other countries. The port shipping industry was from the first largely in the hands of British firms and, with varying fortunes, has remained so ever since. In its earlier days the Oporto Factory House was invested with certain privileges in the way of levying an import duty on British goods brought to Oporto and in return for this the institution maintained for the colony a chaplain, a Protestant church, and an English medical man. This arrangement has long ceased to exist and neither the Factory House nor the British colony possesses now any legal privileges whatever over other residents in the country.

The British colony in Oporto at the present time is comprised of some 500 people and, as mentioned above, the port wine shipping industry and the chief shipping agencies are largely in the hands of British firms. The colony maintains among other institutions a British church, included in the Bishopric of Gibraltar, a small hospital for the sailors of British vessels or any member of the colony or British visitor, cricket, tennis, and rowing clubs, and in addition to the Factory House, membership of which is restricted to members of port shipping firms only, there is a second social club, the Oporto British Club, recently instituted, and under certain conditions open to any Englishman living or staying in Oporto.

PORT WINE.

As the production and shipment of port wine may be said to constitute the *raison d'être* of the British colony in Oporto a few brief notes on the subject may not be out of place here. Though wine is produced in great abundance over almost the whole of Portugal it is a singular fact that it is only in a limited area, in the valley of the Douro, that the combination of conditions, whatever they may be, exists which produces the type of wine characteristic of port. This district, usually known as "the Douro," is situated some 50 miles from Oporto and consists of a very steep valley shut in by high hills and running practically east and west, so that it is exposed to the sun in summer the whole day long. It has been described as a "rugged sun-trap" and the heat in summer is intense and continuous. It is probably this fact, together with the peculiar nature of the soil, that contributes largely to the production of wines of different character from, and superior quality to, the rest of the country. The steep rocky hills and loose, dry, stony soil suggest anything but fertility at first sight but it is a curious fact that the more loose and stony the soil the more the vines seem to thrive on it. The vintage extends over some two to three weeks, from the end of September to the middle of October. The wine is all trodden in vats (*lagars*) by men, no mechanical means of extracting the juice and pulp from the grape having yet been devised which produces such good wine as the primitive form of treading by the naked foot. The wine when made is kept up the Douro till some three or four months later when it falls bright and is then sent down to Oporto (Villa Nova) where it is kept and looked after till it is mature and ready to be shipped. A great deal of it is still sent down from the wine country by the river and owing to the dangerous rapids which have to be negotiated a peculiar type of boat (the so-called "Douro boat") has been developed: it is flat-bottomed and provided with an enormous rudder, to enable the boat to be twisted and turned between the rocks by the boatmen whose skill and intimate knowledge of the river enable them to bring down valuable cargoes of wine with remarkably few accidents. The length of time that the wine is kept in cask differs according to circumstances, the so-called vintage wines being shipped and bottled after some four years and stored in England till fit for consumption, whereas other kinds of port may be kept perhaps 10, 15, or 20 years, or more in cask before being shipped.

PUBLIC HEALTH OF OPORTO.

The city of Oporto possesses such natural advantages both as to situation and climate that it ought to be one of the healthiest towns in Europe. Built on an elevated position, on solid rock, close to the sea on the one hand and surrounded on the other by open hilly country largely covered with pine trees, the situation leaves little to be desired. The steep and in places almost precipitous hills

[1] No. I. was published in THE LANCET of March 24th, 1906, p. 856.

facilitate the natural drainage of the storm water from the abundant and at times violent rainfall, and insure a periodical scouring of the whole city. This, and the purifying influence of the large amount of bright sunshine, constitute two factors in preserving the health of the city that it is impossible to over-estimate. Notwitstanding these healthy natural conditions and the fact that no unhealthy trades are carried on in the city the death-rate remains high. Thus in 1902 (the last year of which I have statistics) it was 35·32 per 1000, though that year would not appear to have been a particularly unhealthy year. The chief causes of this relatively high mortality are not far to seek and may be said generally to consist of the extreme poverty and ignorance of a great proportion of the lower classes; the faulty and insanitary state of a large number of the houses, especially in the older and poorer parts of the city; and the inadequate laws of the country relating to infectious diseases and sanitation generally.

The ignorance of the lower classes in Portugal is extreme and their habits and surroundings are filthy. The overcrowding and want of light and ventilation in the houses in the slums of Oporto are obvious to the most casual inspection. A complete modern system of drains is now being laid down in the city and it may be confidently hoped that when this is in working order the health of the place will be materially improved. At the same time many potential foci of disease are being obliterated by the gradual demolition of old "rookeries" and the building of better houses and wider streets. The law of the country regarding infectious diseases is singularly inadequate, inasmuch as, though notification and house disinfection are compulsory, there is no restriction placed on the exposure of infected patients either in the open streets or in public conveyances. Thus it is no uncommon thing to see cases of small-pox or other infectious diseases mingling freely with healthy people both in the open streets and in public trams. In these circumstances the efforts of the medical officers of health to stamp out epidemic disease are rendered almost nugatory and the notification of disease and house disinfection which follows would appear to be of very little use.

The incidence of disease and death falls naturally very heavily on the poorer classes, and a very large proportion of the deaths in Oporto are due to diseases that if not preventable would be largely diminished if greater power and scope were given to the health officers to enforce sanitary regulations and to isolate infectious cases. During the summer months the great heat, the want of rain, and the faulty hygienic conditions in the poorer parts of the city cause a very heavy mortality among infants from epidemic diarrhœa and a proportionately large number of cases of acute gastro-intestinal disease among adults. Typhoid fever is endemic and a large number of cases appear to be very mild, though the great majority of those occurring among the English colony that have come under my notice during the last few years have been of a severe and prolonged type.

There is a good water-supply to the town and except in isolated localities supplied by fountains and springs liable to contamination there has been no epidemic of recent years that would suggest that the water is the common cause. Contamination of well water from cesspools in the older parts of the town, and in a certain number of cases the swallowing of infected dust or the contamination of food by infected flies, would appear to be the mode of infection. Tuberculosis is very common among the poorer classes owing largely to their badly built, dark, and damp houses, overcrowding, and intolerance of any form of ventilation. It is interesting to note that for very many years, before the discovery of the bacillus tuberculosis, the disease was universally looked upon in this country as being infectious. Among the ignorant it is the one disease which they are afraid of catching and which they are accustomed to take any precautions to avoid. In the case of other infectious diseases, from small-pox downwards, they take not the slightest precautions. "Se Deus quizer" (if God wills) is their motto as regards disease and there the matter ends. Small-pox is endemic and as a rule not of great severity, though outbreaks of increased virulence appear occasionally. Vaccination is not compulsory but is actively encouraged by the maintenance of public vaccination stations. Fortunately most infectious diseases are of a mild type in this country and the genial, sunny climate favours convalescence and diminishes the incidence of inflammatory complications. Ague is prevalent in certain districts and leprosy is present in scattered foci but does not appear to be very common.

HOSPITALS, &c., IN OPORTO.

There is one very large hospital for the treatment of general and special diseases in Oporto, the Misericordia Hospital, a public charity maintained largely by bequests and donations, which admits cases from a very large area in the North of Portugal. Attached to it is a well-equipped Government medical school, the faculty of which grants medical and surgical diplomas. The school of medicine of this country is based largely on the French school and French text-books are mainly if not exclusively used. There are two hospitals for children in Oporto and other institutes for the treatment of diseases of the eye, ear, &c. A large isolation hospital was built some years ago for infectious diseases on the system of separate blocks for different maladies. Owing to the absence of regulations enforcing isolation it is used less than it might be.

In Portugal the various religious societies provide asylums for the maintenance and treatment of cases of chronic disease among the poor and destitute, while numerous medical societies, run much on the same lines as medical clubs in England, exist for the treatment of temporary or slight illness. There is also a large and well-managed asylum for the insane. On the whole, the medical profession in Portugal appears to be overcrowded and indifferently paid. In the out-of-the-way country districts, where the population is sparse and medical men are very few, old wives' remedies are largely resorted to and when these fail the local witch is generally requisitioned, a form of competition which is not unknown even in the larger towns.

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

An Unexplained Case of Anthrax.

AN inquest was held at Bradford about a fortnight since on a case which justified the verdict that the death was due to anthrax. The difficulty, however, was to account for its origin. The girl who died was said to have been engaged in the manipulation of the best kind of Turkey and Cape mohair that had, before reaching her, "been washed, back-washed, and also combed," nor was there any evidence that she had come in contact in the course of her work with any-one who had handled the wools before they were boiled. Nor, though sought for, was any evidence forthcoming that the girl had been exposed to the contagion of anthrax elsewhere than at her work. In charging the jury the coroner made a somewhat important statement: "That the wool was as clean as ever it could be when it reached the girl and if she got the disease from the wool when it was in that condition there was no telling where matters might end." He said, also, that there was no absolute evidence to show that she got the disease while at her work nor, indeed, that she got it elsewhere. This confession of ignorance seems "a lame and impotent conclusion." The verdict was "Death from anthrax," "but where or how the disease was contracted the evidence did not show." It appears that in this case all ordinary precautions were taken, and testimony was given showing that for the great care and the precautions taken in the interests of their workpeople the employers, Messrs. Fosters, might be taken as a model. This may be accepted thoroughly, but the girl got anthrax while working in wool that presumably before being "washed, back-washed, and also combed," had contained anthrax bacilli. No mention is made of any attempt at disinfection beyond the washing. The combing may be dismissed as useless for such a purpose. No attempt apparently was made to sterilise the wool either by heat or other germicides and our bacteriology is in a disappointing condition if these wools cannot be handled without imminent danger to life. Another inquest took place at Bradford on the same day on an undoubted case of anthrax, where it was stated that a wool-puller at another firm, contrary to regulations, had been sorting in the rooms where it was opened and that the men did not wear overalls, and that women also were engaged in sorting. The verdict was "Death from anthrax," and the jury, very properly it would seem, said that sufficient care had not been taken to extract the dust from the mohair and they recommended that men only should be employed where bales were opened, as they did not think it a suitable occupation for women. The dangers to life from the raw material of

this manufacture are so great and the loss of life is so serious that there should be no rest till the possibility of removing these dangers is decided one way or the other. But it is not in Bradford only that anthrax occurs. There was a case—bovine, however—the other day in the Adlington district of Cheshire.

Children and Milk.

At the annual meeting of the subscribers to the Children's Hospital, Pendlebury, held on March 23rd, it was suggested as a means of checking the high infantile mortality of Manchester that a depôt should be established at the new out-patient department in Manchester for the distribution of sterilised and "humanised" milk. In Liverpool it is done on a large scale by the corporation. The high death-rate, 183·8 in Manchester and 198·3 in Salford, of infants under one year during the decade ending 1903 certainly more than justifies another effort to lessen the malnutrition which is the chief agent in the destruction of so much human life. It is considered important that the depôt should be under medical supervision as it would be if connected with the hospital. Dr. R. Caton of Liverpool strongly supported the scheme and said that peculiar changes were taking place in the dietary of the people. Instead of milk and oatmeal there were artificial products, of which tea was one of the most important and the worst poison one could give to a baby. He had been much impressed by the increased prevalence of anæmia among the poorer townswomen of to-day compared with those of 40 years ago. These women could not nurse their own children and many of them had to earn their own living. As an illustration of the ignorance of many of these poor women he said "he had seen a mother cramming a baby a fortnight old with pork-pie." As to the effect produced by the establishment of depôts in Liverpool under the direction of the sanitary committee, he said it had led to a notable decrease in the infantile death-rate. Dr. H Ashby also supported the scheme, but as they could not ask the hospital to finance it, and it would be hopeless to expect the corporation to undertake it at the present time, they must look to public support to enable them to carry it out.

"Scare" against Buttermilk, Butter, and Whey.

Rather an interesting discussion took place recently at the Runcorn district council. The Cheshire county council had forwarded a report by Dr. Sheridan Delépine and Dr. Arthur Sellers, professor and assistant professor of comparative pathology at the Victoria University, on the infectiousness of butter, whey, and cheese prepared from the milk of cows affected with tuberculous mastitis. The report stated that butter, buttermilk, and whey separately obtained from the milk of two cows with tuberculous udders contained virulent bacilli for over a week; the two latter were virulent over ten days; the butter at the end of 24 days was not virulent. There was no evidence of virulent tubercle bacilli in the cheese examined. One gentleman strongly objected to the county council using the ratepayers' money for the purpose of obtaining such a report. He quoted Professor Koch as the greatest authority in Europe and said "he had a meeting of medical officers and others, from Lord Lister down to Dr. Hodgson and Dr. Vacher [rather hard on the two latter], and declared that they could not transmit tuberculosis from cattle to human beings by simply eating the flesh and drinking the milk of the cattle." He was perplexed, not knowing what they must drink. "They had condemned whisky, beer, and tea, and now the county council came down upon harmless buttermilk," and so on. Another gentleman said that he had drunk buttermilk all his life and that the report was all nonsense and ought to be severely condemned. The medical officer, Dr. J. Adams, tried to throw oil on the troubled waters by saying that the only object of the Local Government Board, the county and district councils, and the investigators was to ascertain the truth. It is not difficult to feel sympathy with the farmers, for they have been building their hopes on Professor Koch's dictum and are beginning to find that it does not command universal assent.

A Conclusive Conclusion!

The verdicts of coroners' inquests are sometimes more or less ambiguous but about a fortnight since a St. Helens jury brought in one which seems free from that defect. The foreman informed the coroner that they had come to the conclusion that the death was due to an accident and that "the accident was accidental."

March 27th.

LEEDS.

(FROM OUR OWN CORRESPONDENT.)

Annual Meeting of the General Infirmary.

THE annual meeting of the supporters of this infirmary was held on March 22nd, when the 138th annual report was presented. The figures for 1905 may be summarised as follows. The total number of beds made up and ready for use at the infirmary was 397; of these 91·39 per cent. were occupied continuously, leaving a small margin for emergencies. The number of patients treated in the wards, including 320 remaining in the infirmary at the end of 1904, was 6765. Of the new cases 1235 were medical, 4290 were surgical, and 920 were ophthalmic and aural. The daily average number of beds occupied was 361 and the average duration of the stay of each patient in the infirmary was 19·46 days. The death-rate per cent. was 7·19, but deducting the large number of patients (148) who died within 48 hours of admission the percentage is reduced to 5. There were 829 accident cases admitted, of which 83 died. Of the accidents, the exceptionally large number of 95 were scalds and burns, 57 being in children and 38 in adults. Of these 35 died shortly after admission—viz., 27 children and eight adults. In the out-patient department the total number of new cases amounted to 38,650, a slight decrease as compared with the previous year; this was which Mr. Charles Lupton, the chairman, thought might be in part due to the improved out-patient departments of the Dispensary and the Hospital for Women and Children. In the out-patient maternity department there were 597 confinements. Including those in-patients who had been transferred to the out-patient department the total number of out-patients treated was 44,596. In order to guard against abuse of the charity an inspection officer was appointed some years ago who makes inquiries as to the circumstances of all the applicants for treatment in the out-patient waiting hall. Those who fall within certain limits as to circumstances are further investigated. At the primary investigation 117 applicants admitted their ability to pay and were not attended to. Further inquiries were made at the addresses given in 991 cases and in 90 instances the applicants were found to be able to pay for the kind of advice and treatment that was required. It is, of course, impossible to prevent a certain amount of abuse at a large institution like the infirmary, but it is felt by the members of the staff that the appointment of their officer has in some measure attained this object. The finances of the infirmary were the subject of special comment in the speech of the chairman who dwelt, as he did last year, on the difficulty of comparing the cost per bed at different hospitals without having before one all the data on which such calculations are based. He pointed out that the cost of the treatment of in-patients was yearly tending to increase and that various methods had been introduced with the object of checking any unnecessary growth and that one of the methods adopted at the infirmary to this end was to send to each member of the honorary staff weekly a statement showing the number of patients under his care who were taking stimulants and the quantity consumed, the cost of massage and the number of extra nurses employed in respect of his cases, and, monthly, the cost of dressings. He pointed out that in addition to drugs dressings also are supplied free to out-patients and to old in-patients so long as they remain under treatment by the hospital staff, the cost in the former case being £325 and in the latter £147. Surgical appliances supplied to patients cost £332, to which sum the patients contributed £174. During 1905 the Robert Arthington Semi-convalescent Hospital for women and children was opened and the Ida Semi-convalescent Hospital which was opened in 1887 was put into a condition of thorough repair. These two hospitals are reserved for patients who have been in the infirmary and who require more supervision than can be obtained at the ordinary convalescent hospitals. They are, in fact, true extensions of the infirmary, where the patient may remain under skilled supervision and they enable room to be made at the main institution for more acute cases and cases requiring operation. The Ida Hospital is now reserved exclusively for men and contains 40 beds. The Robert Arthington Hospital contains 48 beds—33 for women and 15 for children—making a total of 88 in the two institutions and a grand total, including the infirmary, of 485 beds always occupied or ready for occupation.

March 28th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Close of the Winter Session.

THE winter session of the medical classes in Edinburgh came to a close on March 23rd. The third professional examination will begin next week, and the classes of operative surgery, in preparation for the final examinations, will open in the middle of April. The summer session will open on the first day of May, and almost immediately the clinical part of the final examinations will begin.

Sir Henry D. Littlejohn.

A movement has been started in medical circles in Edinburgh to mark in some way Sir Henry Littlejohn's long connexion with the medical school and with the public medical life of Edinburgh. A not unusual form for such expression to take is the presentation of a portrait by a prominent painter.

Women Graduates and the Franchise.

Reference has been made on more than one occasion to the claim which the women graduates of Edinburgh and St. Andrews made at the time of the General Election of the right to vote. Legal action has now been formally taken. Six women graduates have raised an action in the Court of Session against the University authorities to have it declared that on the occasion of any future election they are entitled to receive voting papers and to vote. The defence is that the registrar is not directed by the ordinances to send a voting paper to each member of the General Council but to "each voter to his address," and the same Act provides that "no person subject to any legal incapacity shall be entitled to vote." Voting papers have in consequence never been issued by the registrar to persons whose names are entered in the General Council's register but who are legally incapacited from voting in the election of a Member of Parliament, as, for example, in the case of peers and women. The case was heard before Lord Salvesen and was sent to the procedure roll.

Opening of the Liberton Cottage Hospital.

In THE LANCET of March 24th an account was given of this hospital, the latest addition to the philanthropic establishments of Edinburgh. It was formally opened on March 19th by Lord Dalkeith, eldest son of the Duke of Buccleuch, in the presence of a representative gathering. This hospital is to contain, in addition to other accommodation, 14 beds and four cots for incurable cases of pulmonary tuberculosis. It is to be noted that Edinburgh has thus begun to make provision for incurable cases of pulmonary tuberculosis apart from the workhouse hospitals. If the town council decides to devote part of the city hospital to this purpose it will be a further decided step in a direction in which action is greatly required.

The Scottish Association of Medical Women.

As a result of a number of conferences which have been held during the past two years by registered medical women practising in Scotland an association has now been formed, and will be known as the Scottish Association of Medical Women. The first meeting of the association was held in Edinburgh on March 24th. The members of the council of the association, elected by ballot previously to the meeting, are as follows: Dr. Elsie M. Inglis, Dr. Isabella Mears, Dr. Beatrice Russell, and Dr. A. Mary Chalmers Watson, Edinburgh; Dr. Marion Gilchrist, Glasgow; Dr. Emily C. Thomson, Dundee; Dr. Laura S. Sandeman and Dr. A. Mercer Watson, Aberdeen; and Dr. Elizabeth Macrory, Dunfermline. The association elected Dr. Emily Thomson president and Dr. Elsie Inglis vice-president of the association, and at a subsequent meeting of the council Dr. A. Mary Chalmers Watson was appointed secretary and Dr. Elizabeth Macrory treasurer of the association.

March 27th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Dublin Sanitary Association.

A MEETING of the Dublin Sanitary Association took place on March 16th at the Royal Dublin Society. The proceedings were more interesting than usual. The President, Mr. George R. Price, occupied the chair and reported that during the past 30 years 20,000 sanitary dwellings had been provided for the citizens of Dublin. Sir Thornley Stoker, in proposing the adoption of the report, alluded to the gradually diminishing death-rate and made a strong protest against the practice of begging and trading in the streets and charged the police with great dereliction of duty in permitting the growth of this evil. Mr. Henry R. SWANZY, Vice-President of the Royal College of Surgeons in Ireland, proposed a vote of thanks to the President for his admirable address. Sir Charles Cameron, C.B., seconded the motion and emphasised the importance of the sanitary inspection departments of the association. Major D. E. Courtney was elected president for the ensuing year and on the motion of Sir John W. Moore a vote of thanks was passed to the Royal Dublin Society for the use of its fine room for the meeting.

University Education in Ireland.

The Roman Catholic Archbishop of Dublin, Dr. Walshe, recently addressed two long letters to the daily papers finding fault with the methods adopted for carrying out the medical examinations at Trinity College. Professor A. F. Dixon and the extern examiner, Dr. H. Jellett, replied. The chief topic of interest, however, is, of course, the constitution of the new commission on the affairs of Trinity College which, as Mr. Bryce has stated, will be empowered to consider the part which the College should play in regard to the people of Ireland at large. By far the most important and interesting contribution to the discussion appeared in the *Irish Times* of March 26th from Trinity College itself signed by Mr. Edward P. Culverwell, a well-known Fellow of the College.

School Hygiene.

Professor J. A. Lindsay gave a public lecture, under the auspices of the Belfast branch of the Irish Protestant National School Teachers' Association, in Belfast on March 23rd on Some Elements in School Hygiene. He pointed out that many schools, especially in country districts, were ill-constructed, ill-ventilated, dirty, and inadequately provided with some of the most elementary sanitary requisites and he recommended instruction in school hygiene. He stated that of the 300 national schools in Belfast no fewer than 73 were without playgrounds, with the result that the children had to seek their recreation in the streets, a condition of things which could only be described as disgraceful. In conclusion, he thought that they should approach the Commissioners of National Education and memorialise them to the following effect:—

1. That, as far as possible, they would favour the construction of large schools in a central position, built in accordance with modern ideas and fully equipped with class-rooms, cloak-rooms, sanitary requisites, and playgrounds. 2. That a physical register should be kept of each scholar on the lines he had already foreshadowed. 3. That there should be a periodical examination of school premises by a sanitary expert. 4. That there should be an examination of each child as regarded the state of sight, hearing, and the presence or absence of disease. 5. That there should be regular instruction in hygiene provided for both scholars and teachers.

At the conclusion of the lecture a vote of thanks was passed to Professor Lindsay.

March 27th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Origin of Thermal Waters.

IN a communication made to the Academy of Medicine on the subject of thermal waters M. Armand Gautier showed that the peculiar properties of these waters were due to three factors—namely, the nature and the amount of the emanations or vapours disengaged in the regions of intense subterranean heat, the nature of the deep-lying rocks underneath which these emanations act, and the amount of steam given off as the water is being heated. An important effect is also produced by the nature of the strata which the waters traverse in their long progress from the region of intense heat where they are first elaborated to the delivery pipes of the establishments where their qualities are turned to practical account.

Two Cases of Sigmoiditis.

At a meeting of the Surgical Society held on March 14th M. Sieur described two cases which had been under his care. The first patient was an officer, 45 years of age, who had formerly suffered from attacks of malaria and intestinal

troubles. In November, 1903, he felt in the left iliac fossa a violent pain which abated after some days but reappeared on riding or even on walking. Although there was no actual constipation the action of the bowels was sluggish, while the fæces contained mucus and were often tinged with blood. There was no pyrexia but there were some degree of emaciation and frequent insomnia. Moreover, a hard and tender swelling of considerable size could be felt in the iliac fossa. After eight days' complete rest and the use of enemata containing oil an improvement set in; after one and a half months only a small lump not particularly tender could be felt in the iliac fossa and in a short time recovery was complete. In the second case observed by M. Sieur the patient was a gendarme, 36 years of age, who had had an attack of typhoid fever in 1895. He had for some time suffered from frequent fits of colic and periods of constipation lasting for several days. On examination his abdomen was found to be tympanitic and a painful swelling of the size of a mandarin orange could be felt in the left iliac fossa. The same treatment was adopted as in the former case and the result was complete recovery in two months.

The Surgical Treatment of Wounds of the Heart.

At the same meeting of the Surgical Society M. Quénu described two cases in which wounds of the heart had been surgically treated. One of the patients had been under his own care and the other under that of M. Savariaud. The first patient was a woman, 19 years of age, who had stabbed herself with a knife in the region of the heart. Taken in a little more than an hour afterwards to the Hôpital Cochin, she was operated on by him almost immediately. A flap containing portions of the third, fourth, and fifth ribs was cut in the left side of the thorax. The pleural cavity contained only a little blood but the pericardium was filled with it. On the upper part of the anterior aspect of the left ventricle there was a wound from which red blood flowed. It was closed with two separate sutures of fine linen thread. The pericardium and the pleura were cleansed and sutured without drainage, the whole operation occupying 25 minutes. Recovery was complicated by a slight hæmorrhagic effusion into the left pleura. At present (one month after the operation) the patient was at home and was going on as well as possible; there were still some dulness and diminution of the vesicular murmur at the base of the left lung. The patient under the care of M. Savariaud was a woman who had been stabbed with a dagger which wounded the right ventricle of the heart. He operated two hours and a half after the receipt of the injury. He made a flap hinged externally (*à charnière externe*) according to the method of Fontan, opened the pleura, found the pericardium full of blood, drew out the heart and inserted three catgut sutures in the cardiac wound. He then sutured the pericardium, the pleura, and the thoracic flap without drainage. The operation lasted 25 minutes. Next day the patient's temperature rose to 38·5° C. and on subsequent days it exceeded 39·5°. On the sixth day the left pleura contained sero-purulent fluid and was drained. The patient died on the fourteenth day and at the necropsy it was found that the wound in the heart had become united and that there were purulent effusion in the pericardium and pyo-pneumothorax on the left side. Death seemed to have resulted from a pulmonary infection having extended to the pleura and pericardium.

Absorption of Tuberculin by the Digestive Tract.

At a meeting of the Academy of Sciences held on March 12th M. Calmette and M. Breton described certain experiments which they had made on healthy and tuberculous guinea-pigs with respect to the effect produced by the ingestion of tuberculin without previously rendering the contents of the stomach alkaline. These researches led them to conclude that tuberculin absorbed by the digestive tract was toxic for non-tuberculous animals, more especially when the animals were young. They found that the ingestion of progressively increasing doses of tuberculin did not induce tolerance. Guinea-pigs rendered tuberculous by being on only one occasion fed with infective material reacted distinctly to one milligramme of tuberculin administered by the mouth—a quantity which had no effect on healthy guinea-pigs. Moreover, in animals which were either tuberculous or suspected of being so the diagnostic reaction could be obtained when the tuberculin was given by the mouth just as well as when it was injected subcutaneously.

March 27th.

ITALY.

(FROM OUR OWN CORRESPONDENT.)

A Biologico-Medical Station above the Snow Line.

"THE old order chargeth," even on altitudes "pinnacled dim in the intense inane." The Great St. Bernard, which alone among its Alpine brethren was without a *strada carrozzabile* or carriage-road, is now equipped with that convenience and gives passage to the motor-car. Within measurable distance in time its famous hospice will have passed into history, to be remembered for its two-fold service of shelter to the wayfarer and rescue or relief to the snow-engulfed pilgrim—service embalmed in literature, in the noble sonnet of a physician and true poet, the late Dr. David Macbeth Moir of Musselburgh:—

"Where these rude rocks on Bernard's summit nod,
Once heavenward sprang the throne of Pennine Jove,
An ancient shrine of hospitable love,
Now burns the altar to the Christian's God.
Here peaceful piety, age on age, hath trod
The waste, still keeps her vigils, takes her rest;
Still, as of yore, salutes the coming guest,
Or cheers the weary as they onward rove,
Healing each way-worn limb; or oft will start,
Catching the storm-lost wanderer's sinking cry,
Speed the rich cordial to his ebbing heart,
Chafe his numbed limbs and bid him not to die;
So tasked to smooth stern winter's drifting wing
And garb the eternal snows in more eternal spring."

—a sonnet better known abroad in a beautiful Latin version by that accomplished Cambridge scholar Dr. Samuel Butler, sometime Bishop of Lichfield:—

"Haec ubi saxa vides Bernardi in monte, viator,
Pennini quondam templa fuere Jovis—
Hospitium vetus et multis memorabi e saeclis—
Nunc colitur veri sanctior ara Dei.
Scilicet hic olim voluit sibi ponere sedem
Religio, et notis gaudet adesse jugis;
Utque prius blandâ venientes voce salutat
Deque viâ fessis alma ministrat opem;
Et fractas reparat vires reficitque labantem,
Et fovet Alpino membra perusta gelu;
Et quos obruerit subitâ nix lapsa ruinâ
Erigit ex altâ mole vetatque mori;
Temperat et Boreae rabiem mollitque pruinas
Et facit aeterno vere tepere nives."

But if the hospice, on the Great St. Bernard and other passes, is destined to disappear the healing art, which in primitive fashion it subserved, will have a still nobler representative in the biologico-medical station, wider in aim and efficiency, and fitted for a service undreamt of in the philosophy of the Augustinian monks. The first of these, "Il più elevato istituto scientifico del mondo" (the most lofty scientific institute in the world), was begun in the July of last year in the same Pennine region, on the Colle d'Olen, 3000 metres above sea-level. Slowly and steadily it is advancing to completion—only three months out of the 12 being available for the work—till next year, it is hoped, will see it *un fait accompli* and 1908 will find it tenanted by the nature students for whom it is intended. It owes its origin to Dr. Angelo Mosso, professor of physiology in the Subalpine School, whose researches on the effects of high altitudes on the respiratory system and on the "pathology of fatigue" are well known to readers of THE LANCET, while its design, enthusiastically seconded by his colleagues in Turin, has received the substantial support, not only of the Alpine Club of Italy but also of the Dowager Queen Margherita of Savoy and of the Italian, Belgian, German, and Austro-Hungarian Governments. This coöperation was necessary, as the estimated cost is considerably beyond the means of the local school—to wit, 70,000 francs (£2800) for the building alone and at least 30,000 francs (£1200) more for the equipment of its laboratories and for the board and lodging of its working staff. When this initial outlay has been covered there will remain the funds necessary for maintaining it in efficiency and in repair, and with this view it is announced that every person who subscribes 5000 francs (£200) will be entitled to a place in the institute and to one of its 16 bedrooms. Nature study in all its bearings, immediate and remote, on medicine will be encouraged and facilitated within its walls. A small but thoroughly well-equipped laboratory will be available for the botanist, the physiologist, the bacteriologist, the physician, the geologist, the mineralogist, the chemist, and the meteorologist. The *Leit-motif* of the institute being international, the Colle d'Olen will form a rendezvous for all members of that republic of science which ignores racial or

class distinction in its homage to the interests of truth and the evolution of humanity. Meanwhile, during the three summer months the physician or nature student on his holiday might do worse than pay a visit to the nascent institute, certain of finding ready and congenial guidance from one or other of the staff of the great Subalpine School. A well-appointed "albergo" (inn) awaits him near his journey's end, some two miles below the institute, a house of entertainment run on liberal lines by Signor Giuseppe Guglielmina, whose name it bears. Before and after these said summer months the institute will be all but inaccessible from the depth of snow and the wild tornados bombarding its roof and walls with stones or whatever missile the landslide or the avalanche can improvise. All the same it will not be wholly untenanted, two or more nature students occupying it in the twofold service of caretaking and research, sustained by the studies of their choice and by the enthusiasm that courts rather than shuns isolation—resources against ennui and "moral friction" seldom enjoyed by the proverbial two men in the lighthouse! Nor is the institute without its poet-laureate. Touched to "issues" hardly less "fine" than those of the eulogist of the Great St. Bernard and its hospice, the Turinese poet Angelo Rizzetti has dedicated to it an ode as worthy of transfusion into another tongue as the sonnet of "Delta" into the Latinity of Bishop Butler.

March 28th.

CONSTANTINOPLE.

(FROM OUR OWN CORRESPONDENT.)

Milk and Milk Products in Turkey.

ONE of the French newspapers published in the Turkish metropolis has an able article on the subject of milk production in the Ottoman Empire. Though Turkey is an agricultural country the cattle are not well fed, on which account both oxen and cows do not compare favourably with British cattle as regards their appearance. The cows give little milk, rarely more than four litres daily, and only a small proportion is reserved for the calves, which are accordingly deprived of their natural sustenance and are forced to graze before they are old enough. The sheep and the goats are somewhat more favoured by circumstances. They find their food on steep tracts of country and in woods but, of course, damage the forests and plantations. The milk of the sheep is largely employed in the making of cheese. In the Turkish towns and cities sheep's milk is a favourite article of food and it is sold in Constantinople at two piastres the oke (one oke = 1282 grammes and six piastres = 1*s.*). Turkey consumes a very large quantity of butter, of which the largest proportion is imported from abroad. The imported butter is estimated to amount to about 3,000,000 kilogrammes yearly, which represents a value of about 5,000,000 francs. The best butter is said to be imported from Milan, and the annual supply from that city is more than 1,500,000 kilogrammes. About 2,000,000 kilogrammes are imported from Siberia but this butter is of a decidedly inferior quality and is largely used for cooking purposes; it is sold here at two francs per kilogramme, whereas Milanese butter costs double the price. Milk in Turkey is chiefly used for making the so-called "yoghourt" which forms in the whole of the Ottoman Empire, together with bread, the chief basis of alimentation of the rural population. "Yoghourt" is practically curdled milk; it is produced from the milk of cows, buffaloes, goats, or sheep. It is sold at from two to four piastres the oke. Another dairy product is the so-called "caymak," generally prepared from the milk of buffaloes. It costs about 20 piastres the oke and is usually consumed with sugar, all sorts of sweetmeats, &c. It is rather a delicacy and might be described as solidified cream. Of the various Turkish cheeses the best known is the "salamour," which costs from three to six piastres the oke. When this cheese remains a long time in brine it acquires a very strong taste. It is then very frequently used for the making of another form of cheese called "touloum-penir" (*touloum* = leathern bag; *penir* = cheese). For this purpose the "salamour" is rasped and rendered very hard by prolonged kneading. In this way the brine is extracted. "Touloum-penir" is sold at from six to eight piastres the oke.

March 24th.

Obituary.

HARRY SCOTT, M.D. EDIN., L.R.C.P. & S. EDIN.

Dr. Harry Scott died at his residence, Waverley House, Newquay, Cornwall, on March 19th, in his forty ninth year. The deceased, who received his medical education at the University of Edinburgh, also studied at the Owens College, Manchester, Paris, and Vienna. He graduated as M.B., C.M., at Edinburgh in 1883, having taken the L.R.C.P. and L.R.C.S. qualifications at Edinburgh in the previous year. He obtained the M.D. degree in 1887 and was commended for his thesis on the Relationship of Nasal to Pharyngeal and Laryngeal Inflammations. After holding resident appointments at Ancoats Hospital, Manchester, and at the Manchester Hospital for Consumption, Dr. Scott commenced practice in Westminster, London, and was for ten years medical officer to the Westminster Dispensary and also medical officer to the Westminster Choir House. About nine years ago, owing to failing health, he went to Newquay, and after two years' residence there, his health having been greatly improved, he commenced practice at Eastbourne, but unfortunately the improvement was only temporary and he again returned to Newquay, where after a time he resumed medical work. Dr. Scott was highly respected at Newquay and much sympathy is felt there for his widow and child. The funeral, which took place on March 23rd, was largely attended, amongst others present being all the local members of the medical profession.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. Rogmann, professor of ophthalmology in the University of Ghent.—Dr. Luigi D'Amore, *privat-docent* of experimental pharmacology in the University of Naples.—Dr. Oscar Wanscher, extraordinary professor of external pathology in the University of Copenhagen, at the age of 60 years.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held in March the following candidates passed in the subjects indicated:—

Surgery.—A. J. Ambrose (Section I.), Westminster Hospital; J. B. Banister (Sections I. and II.), Cambridge and Charing Cross Hospital; W. V. Pegler (Section I.), Leeds; T. H. Roberts (Section II.), London Hospital; and A. F. Van Dijk (Sections I. and II.), St. Bartholomew's Hospital.

Medicine.—J. B. Banister (Sections I. and II.), Cambridge and Charing Cross Hospital; A. W. S. De Vine (Section I.), Birmingham; R. C. T. Evans (Section II.), University College Hospital; J. P. E. Henery, St. George's Hospital; F. F. L. How, University College Hospital; F. J. F. Jones (Section II.), Guy's Hospital; and E. Lowry (Sections I. and II.), Royal Free Hospital.

Forensic Medicine.—J. B. Banister, Cambridge and Charing Cross Hospital; F. J. F. Jones, Guy's Hospital; J. W. Pratt, London Hospital; and C. S. Spencer, Manchester.

Midwifery.—J. B. Banister, Cambridge and Charing Cross Hospital; M. L. A. Boileau, Royal Free Hospital; A. W. S. De Vine, Birmingham; and P. Moxey, Bristol.

The diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery: J. B. Banister, J. P. E. Henery, F. J. F. Jones, E. Lowry, T. R. Roberts, and A. F. Van Dijk.

VICTORIA UNIVERSITY OF MANCHESTER.—At examinations held in the Faculty of Medicine in March the following candidates were successful:—

FINAL EXAMINATION.

Part I.—J. W. Bride, J. F. Dow, J. A. Fairer, Frank Hartley, C. G. Howlett, Robert Lakin, W. P. Moffet, Peter Moran, Wilfrid Nightingale, Alice Oberdorfer, C. H. S. Redmond, Robert Robertson, Elsie M. Royle, A. C. Turner, G. B. Warburton, Henry Whitehead, and N. R. Williamson.

Part II.—Charles Brown, Francisco da Cunha, H. M. Fort, William George, P. J. Harris-Jones, Godfrey Heathcote, A. W. Howlett, F. H. Lacey, Roland Nightingale, P. L. Pollard, M. B. Potts, and Julia C. White.

SECOND EXAMINATION.

A. Anatomy and Physiology.—J. A. Bateman, T. B. Bolton, Norman Booth, C. H. Broomhead, George Crawshaw, W. C. Denniston, H. M. C. Green, J. H. C. Green, Frances M. Huxley, F. F. Laidlaw, E. K. Lomas, W. P. Marshall, W. W. Martin, John Morley, Lawrance M. C. Skillern, John Thompson, R. B. Thompson, W. W. Uttley, T. G. Williams, and A. E. Woodall.

B. Materia Medica and Pharmacy.—Elsie Brown, W. A. Bullough, Edward Gandy, Cedric Pimblett, and B. E. Trevor-Roper.

DIPLOMA IN PUBLIC HEALTH.

Part II.—H. J. Crompton, C. H. Dyer, H. D. Haworth, A. S. Parkinson, and F. E. Tylecote.

TRINITY COLLEGE, DUBLIN.—At examinations held in Hilary term the following candidates were successful:—

INTERMEDIATE MEDICAL EXAMINATION.

Part I.—Samuel F. A. Charles, William E. Hopkins, Gerald G. Mecredy, Norman P. Jewell, Dixie P. Clement, Alfred H. Smith, Charles W. Laird, Frank R. Seymour, Ernest C. Lambkin, Henry H. Ormsby, Robert de C. Wheeler, James F. Clarke, Alexander S. M. Winder, Frederick A. Anderson, William H. McCarthy, Henry R. Kenny, John H. Morton, William E. M. Armstrong, Frank Smartt, and Julian B. Jones.

PRELIMINARY SCIENTIFIC EXAMINATION.

Physics and Chemistry.—James H. Crane, George Halpin, Richard H. Mathews, William P. H. Smiley, Benjamin A. Molyneux, Beatrice M. Hamilton, Henry H. James, Herbert V. Stanley, John T. M'Donnell, and James Beckett.

Botany and Zoology.—John A. W. Ponton, Albert V. J. Richardson, Desmond Drew, Duncan F. Hunter, William H. Hart, James P. S. Dunn, Walter E. Adam, Brindly H. Moore, Hans Fleming, Charles O'Brien, Edward H. Murphy, Patrick F. Nunan, Samuel R. Richardson, Bethel A. H. Solomons, Edward Garland, Victor B. Kyle, Hugh S. Metcalf, Gervase Scroope, William H. Sutcliffe, John W. Flood, and Frank R. Seymour.

FALMOUTH AND TRURO PORT SANITARY AUTHORITY.—Mr. C. C. Bullmore, medical officer of health, in his annual report for 1905, states that during the year 2846 inspections of ships were made, being the highest number on record. Cases of sickness were found in 37 vessels. Only eight cases of beri-beri had been brought to his notice, a decrease as compared with 1904.

SERIOUS ASSAULT ON AN ASYLUM ATTENDANT.—At a meeting of the Dorset county council, held on March 13th, it was decided to grant a "compassionate allowance" of £30 per annum to a nurse in the asylum who had lost the sight of both eyes through being attacked with a pair of scissors by a patient who was suffering from homicidal mania. The council also passed a vote of sympathy with the unfortunate girl.

WEST HAM AND EAST LONDON HOSPITAL.—A sale of work in aid of the West Ham Hospital is being organised by the Duchess of Marlborough to take place at Grosvenor House by permission of the Duchess of Westminster on May 17th and 18th. This sale is supplementary to the very successful bazaar held in November for the benefit of this deserving institution. The bazaar, which was opened by T.R.H. the Duke and Duchess of Connaught, realised upwards of £3000, but many articles remained unsold, and as they were given outright it is hoped to dispose of them all. The needs of the institution are very great owing to the distress of the past two winters.

ASSOCIATION OF BRITISH POSTAL MEDICAL OFFICERS.—The Right Hon. Sydney Buxton, M.P., the Postmaster-General, has accepted an invitation to be present at the annual banquet of this association in the Whitehall Rooms, Hotel Métropole, London, on Wednesday, July 11th. It is possible that some members of the profession who have been recently appointed medical officers to the Post Office may not be acquainted with the useful work done by the association which is well worthy of their support. Any medical officer to the Post Office wishing to join the association or to obtain further particulars should apply to the honorary secretary, Dr. R. Ritchie Giddings, 206, Mansfield-road, Nottingham.

ALUMINIUM BOOKS.—The Braille Printing Co., Edinburgh, has just brought out a novelty in printing for blind people. Instead of using paper the books are made of thin aluminium sheets, embossed in the usual manner. It is claimed for these books that they are far easier to read than the best paper books, especially by those who have become blind late in life or those whose fingers are not very sensitive. The great point is that they do not get dirty, like so many of the books seen in public and other libraries, and that they are practically indestructible. Unfortunately, aluminium is an expensive material and 100 bound books of 20 large pages (royal quarto) would cost £20, or 5*s.* a copy. Specimen sheets containing the alphabet and the Lord's Prayer (without contractions) may be had from the publishers, price 6*d.*, and this sheet alone should enable any blind man to teach himself to read uncontracted "Braille" without any other assistance.

ROYAL COLLEGE OF SURGEONS IN IRELAND.—The President and Council have appointed Dr. E. Wolfenden Collins of Sydenham, formerly surgeon to Jervis-street Hospital, Dublin, a delegate to represent the College at the coming Fifteenth International Congress of Medicine at Lisbon.

NOTIFICATION DIFFICULTIES AT CHIPPING SODBURY.—At a meeting of the Chipping Sodbury rural district council held on March 21st the clerk, as a matter of urgency, drew the attention of the members to the notifications of infectious diseases, and suggested writing to the Local Government Board asking it to issue an order for the appointment of a medical officer of health or to sanction the appointment of the council's nominee. After a considerable discussion it was decided to adjourn the matter for a fortnight.

BRISTOL ROYAL HOSPITAL FOR CHILDREN AND WOMEN.—The fortieth annual meeting of the subscribers to this institution was held on March 10th, under the presidency of the Lord Mayor. The medical report stated that 804 children had been admitted as in-patients during 1905, as compared with 759 in 1904; 76 women were admitted, as against 75 in the previous year; 3473 children and 1736 women were treated in the out-patient department. The financial statement showed that the total ordinary income amounted to £4395 and that the ordinary expenditure was £4909.

SOCIETY OF ARTS.—The second of four Cantor lectures on Fire and Fire Risks was delivered at the Society of Arts by Professor Vivian B. Lewes on March 19th. He said that in the early stage of a conflagration the principal emanation was smoke in which vesicles of air were inclosed in an envelope composed of hydrocarbons and soot. A smoky atmosphere might be entered merely with the protection of a respirator or even a handkerchief tied over the mouth and nose, but when the fire was intense, and especially when water had been poured on it, carbon monoxide was formed so that any form of filtration apparatus was useless and entry could only be made by persons provided with helmets and portable reservoirs of oxygen such as were employed by the German rescue party in the recent French colliery accident at Courrières. Passing then to the subject of how fires originated, he said that returns obtained from a number of large cities showed that accidents with matches were by far the most frequent cause of conflagrations. Matches, however, had become indispensable in ordinary life. The use of the flint, steel, and tinder-box, which had for centuries been the only means of obtaining fire, survived in some out-of-the-way places till about the year 1840 but the first advance in this direction was made in 1805 when Chancel, an assistant to the French chemist Thénard, introduced the so-called chemical matches. They were wooden splints tipped with sulphur over which was applied a composition containing sugar and potassium chlorate, and this composition was ignited by contact with sulphuric acid, small bottles of which were sold with the matches. The first friction matches were invented by Mr. John Walker of Stockton-on-Tees in 1827; they contained tersulphide of antimony and were called congreves. Phosphorus matches were invented by Preschel in 1833. He found that when phosphorus was stirred in a solution of glue hot enough to melt it, the phosphorus became very finely subdivided and when small portions of the mixture were allowed to dry the coating of glue effectually protected the phosphorus from oxidation. In the manufacture of these matches a mixture of glue, phosphorus, potassium chlorate, and powdered glass was applied to splints of wood previously tipped with sulphur or solid paraffin. When these matches were struck the phosphorus was exposed by the stripping off of the glue and the heat of the friction caused the phosphorus and potassium chlorate to react on one another. Safety matches were patented by May in 1855. They were tipped with a composition containing tersulphide of antimony and potassium chlorate, the phosphorus in an inert condition being spread on the outside of the box. It was possible, however, to ignite a safety match without the action of phosphorus merely by a long, steady, light stroke on a smooth surface such as a sheet of glass or even a piece of paper. Professor Lewes then described fire risk arising from what he called pyrophoric carbon. When exposed constantly for many months to a heat far

short of charring timber undergoes a change by which it is rendered very inflammable and capable of smouldering. Joists which are carried near a chimney or under a fireplace, or even the wooden casings of hot-water pipes, are liable to pass into this condition. On the subject of paraffin lamps he said that they ought to have no side vents and that they should be refilled frequently enough to prevent the formation of a large empty space above the oil.

CENTENARIANS IN HUMBLE LIFE.—At a meeting of the Long Ashton (Somerset) board of guardians held on March 20th it was decided to grant "extra relief" to Mrs. G. Tovey of Winford, who celebrated her centenary on March 27th. Mrs. H. Coleman, of Cleave, who is in her 105th year, was recently granted "extra relief" by the same guardians.

HEALTH OF CHELTENHAM.—The medical officer of health of Cheltenham (Dr. J. H. Garrett) in his annual report for 1905, which has just been issued, states that the birth-rate was 19·7 per 1000, as compared with 20·6 per 1000, the average of the previous ten years. The death-rate was 14·8 per 1000, against 15·2 per 1000, the average of the preceding ten years. The infant mortality was 131 per 1000, a decrease of two on the ten years' average. Dr. Garrett adds that the greatest decrease in births was shown to have been amongst middle-class people.

UNIVERSITY OF LEEDS.—A Congregation of the University of Leeds was held at the Medical School on March 23rd, when the degrees of Bachelor of Medicine and Bachelor of Surgery were conferred by the Vice-Chancellor upon the following: James Stirling Crawford, Roland Brooke Radcliffe, and Albert Latimer Walker. The following students have passed Part I. (Anatomy and Physiology) of the second M.B. and Ch.B. examination: H. L. Flint, J. H. M. Frobisher, S. M. Hepworth, G. A. C. Mitchell, G. C. H. Nicol, and H. Vallow. The third term or summer session will begin on April 23rd and will close on July 13th.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Miners and Pulmonary Tuberculosis.

IT is alleged that there has been excessive mortality from pulmonary tuberculosis among the miners who have returned home after working in the Transvaal mines. The attention of the House of Commons will be called to the matter on an early date.

Vaccination.

For the evening sitting of Wednesday, April 4th, Mr. LUPTON has given notice of his intention to call attention to the question of vaccination and to bring forward a motion. It is probable, however, that a motion relating to Ireland which has precedence will occupy the greater part of the sitting.

Hendon Vaccine Station.

In the memorandum just issued with the estimates for the ensuing financial year it is stated that a sum of £23,200 represents the amount needed for the completion of the Hendon Vaccine Station.

Public Health Acts (Amendment) Bill.

This Bill, which has been read a second time in the House of Lords, is designed to effect certain relaxations in building by-laws, the ultimate object being, in the words of the promoter, Lord HYLTON, "to encourage the construction of suitable dwellings of a cheap type for the working class in country districts and to free them from some of the onerous, almost tyrannical, conditions which by-laws, really intended for application to buildings in the streets of cities, now imposed in connexion with the construction of rural cottages." Should the Bill proceed it will be considerably amended. The Government has promised to see to that and the attitude which it is likely to adopt is indicated in Mr. JOHN BURNS'S statement, that while he is as desirous as anyone to encourage building he will attempt to see that nothing is done to encourage bad workmanship and insanitary conditions.

The Workmen's Compensation Bill.

The Workmen's Compensation Bill, which was introduced in the House of Commons on March 26th by Mr. GLADSTONE, deals with industrial disease. Included in the Bill are the following diseases: anthrax, lead poisoning, mercury poisoning, phosphorus poisoning, arsenic poisoning, and ankylostomiasis. The special clause contains this general provision: "Where a workman is certified to be suffering from disease and thereby partially or totally disabled from earning full wages and his disease is due to the nature of the employment on which he has been engaged during the previous 12 months he is to be entitled to compensation, the compensation to be recovered from the employer who last employed him. But if the employer proves that the disease was, in fact, contracted or developed while the workman was in the service of another employer or employers there is to be proportionate and collective responsibility." Another important section has reference to the medical referee. As the law now stands, when there is an accident and a workman is injured he has to submit himself to the employer's medical man who reports to the employer. If there is disagreement there is no remedy but proceedings in the courts. If proceedings are taken under the Employers' Liability Act medical evidence is taken, but it is not competent to bring the medical referee into court; but if they are taken under the Workmen's Compensation Act, after hearing the medical evidence, a medical referee may be appointed and his judgment is final. This leads to considerable delay and cost and so under the Bill it is provided that if there is no agreement after injury between the employer and the workman, on the report of the employer's medical man, the employer or the workman, on payment of a fee, can apply to the court and the registrar may at once appoint a medical referee whose judgment will be final. And in case of review either party in the same way can apply to the court and the registrar will appoint a referee whose judgment will be final. The Secretary of State may, with the sanction of the Treasury, appoint medical men to be referees under the Act, and, subject to the Treasury regulations, remuneration and expenses may be paid to them out of public money. In the course of the debate the SOLICITOR GENERAL explained that the provisions with regard to industrial diseases are an experiment. No attempt is made to define industrial disease in general; the Government only specifies certain diseases which are known to arise from particular causes, which can be easily traced and identified, and as to which a very fair estimate can be formed of the time when they arise. These specified diseases are made the subject of compensation as if they were accidents because they are nearly all cases very much like accidents.

Epileptic Children.

Mr. GULLAND has brought in a Bill to provide for the education and conveyance to school of epileptic and crippled and defective children in Scotland.

Huddersfield and the Notification of Births.

The corporation of Huddersfield has succeeded in obtaining the sanction of a select committee of the House of Commons to the insertion in an omnibus bill of an important clause concerning the notification of births to the medical officer. Among the witnesses who spoke in support of the proposal before the committee was Sir WILLIAM BROADBENT, and the CHAIRMAN, in announcing the approval of the committee, went out of his way to congratulate the corporation upon its excellent work in this matter and its possession of so competent a medical officer as Dr. S. G. Moore. The text of the clause is as follows:—

1. In the case of every child born within the borough after the commencement of this Act it shall be the duty of the father of the child if he is actually residing in the house where the birth takes place at the time of its occurrence or in his absence of any person in attendance upon the mother at the time of the birth or within six hours thereafter to send or give notice of the birth to the medical officer within forty-eight hours after such birth. Every person required by this section to give or send such notice who fails without reasonable excuse to give or send the same shall be liable on summary conviction in manner provided by the Summary Jurisdiction Acts to a fine not exceeding twenty shillings, including costs for each offence: Provided always that if a person required to give notice as aforesaid satisfies the court that he had reasonable grounds to suppose that notice had been duly given he shall not be liable to any fine under this section.

2. The corporation shall pay to the father or person aforesaid who notifies a birth under the provisions of this section a fee of one shilling.

3. Any registrar of births and deaths whose sub-district or any part thereof is situated within the borough shall at all reasonable times have access to the notices of birth received by the medical officer of health under the provisions of this section or to any book in which such notices may be recorded for the purpose of obtaining information concerning births that have occurred within his sub-district.

4. The notification required to be made under this section shall be in addition to, and not in substitution for, the requirements of the general Acts relating to the registration of births and deaths.

5. The corporation shall cause to be given public notice of the effect of the provisions of this section by advertisement in the local newspapers and by handbills and shall give formal notice thereof by registered post to every medical practitioner in the borough and any other registered medical practitioner known to be in practice in the borough, and to all women duly registered as midwives or known to be practising midwifery within the borough and otherwise in such manner as the corporation think sufficient and this section shall come into operation at such time not being less than one month after the first publication of such an advertisement as aforesaid as the corporation may fix.

6. The provisions of this section shall cease to be in force within the borough at the expiration of five years from the date of the passing of

this Act unless they shall have been continued by Act of Parliament or by Provisional Order made by the Local Government Board and confirmed by Parliament which Order the Local Government Board are hereby empowered to make in accordance with the provisions of the Public Health Act, 1875.

The Poisons and Pharmacy Bill.

The Society of Apothecaries has addressed a vigorous protest to the Lord President of the Council against the introduction of any amendment to this Bill which would tend to deprive the numerous holders of the assistant's or dispenser's certificate granted by the Society of their right to dispense medical prescriptions or to limit that right. An answer has been received which is deemed satisfactory.

HOUSE OF COMMONS.

THURSDAY, MARCH 22ND.

Physical Development and Teeth of Recruits for the Volunteer and Yeomanry Forces.

Mr. VIVIAN asked the Secretary of State for War whether he would consider the advisability of now relaxing the regulations as to the physical development and teeth of recruits for the Volunteer and Yeomanry forces.—Mr. HALDANE answered: I am not aware of any reasons for considering that the physical standard laid down for recruits of Imperial Yeomanry and Volunteers is too high nor does my honourable friend suggest any. As regards teeth there is no fixed standard and the matter is left to the judgment and discretion of the examining officer.

National Vaccine Establishment.

Mr. J. W. BENN asked the President of the Local Government Board whether in any instance lymph had been used at the national vaccine establishment which had been derived from the artificial inoculation of calves with small-pox and its subsequent cultivation on a series of calves.—Mr. BURNS replied: The usual method of obtaining lymph for use at the national vaccine establishment is by vaccinating calves with vaccine lymph obtained from children. Occasionally, however, the lymph has been procured from abroad and it is possible that in some instances of this kind the lymph may have been originally derived from artificial inoculation of calves with small-pox but in no case is lymph used at the establishment unless it has been passed through a series of calves.

MONDAY, MARCH 26TH.

Typhoid Fever in the Lews.

Mr. WEIR asked the Secretary for Scotland whether he was aware that an outbreak of typhoid fever at Habost, in the Ness district of the parish of Barvas, Island of Lewis, which up to Feb. 13th had resulted in 75 cases, was attributed by the local medical officer of health of Barvas parish to the drinking water being contaminated, and what steps had been taken to secure a supply of pure water.—Mr. SINCLAIR answered: I am aware of the unfortunate outbreak of fever referred to and that it has been attributed to the water-supply. The Local Government Board has called on the local authority for information as to what steps have been taken to improve it, and I am glad to be able to say that a new well has been sunk at Habost, Ness, at a spot selected by the medical officer and the sanitary inspector and that on March 23rd the medical officer reported favourably upon the water and that a specification is being prepared to have the well protected and water brought to the roadside and that the work will be proceeded with at once.

TUESDAY, MARCH 27TH.

Teachers and Vaccination.

Mr. RAMSAY MACDONALD asked the President of the Board of Education whether he had received an application from the education committee of Leicester asking that the teachers might be excused from being vaccinated against their will, and whether, in view of the fact that vaccination was no longer compulsory by law, he would allow persons with a conscientious objection to vaccination to be accepted as teachers.—Mr. BIRRELL answered: I have received the application mentioned in the question. It has always been the practice of the Board to require that all persons proposing to be engaged as teachers should be vaccinated. I understand that in certain districts local authorities find it difficult to obtain teachers owing to the fact that a considerable part of the population has not been vaccinated. As it is the local authority and not the Board which engages the teacher it is a matter of consideration whether it might not be possible to throw upon local authorities the onus of consenting or refusing to employ unvaccinated teachers. But the question is one of so much importance that I am not yet prepared to make any definite statement.

Regulations for Scotch Nurses.

Mr. BARNES asked the Secretary for Scotland whether he was aware that the Glasgow parish council had approved of new regulations for nurses in their employ, whereby the said nurses had had their average weekly hours of labour increased to 71 and their maximum salaries reduced to £35; and, seeing that the Exchequer gave maintenance grants towards these nurses' up-keep, did the Government intend to sanction the new regulations.—Mr. SINCLAIR answered: The facts are as stated. The Government has no power to interfere either with the regulations or with the present distribution of the grants. The regulations will not come into force for some weeks and a petition has now been presented to the council by the nurses asking that they may have each alternate Sunday off duty, which I am informed will meet their wishes.

BOOKS, ETC., RECEIVED.

BAILLIÈRE, TINDALL, AND COX, 8, Henrietta-street, Covent Garden, London, W.C.

Aids to Surgical Diagnosis. By H. W. Carson, F.R.C.S., Surgeon, Tottenham Hospital. Price 3s. 6d.

The King's Coroner, being the Practice and Procedure in his Judicial and Ministerial Capacities. By R. Henslowe Wellington of the Middle Temple and South-Eastern Circuit, Barrister-at-Law, Deputy Coroner for the City and Liberty of Westminster, and for the County of London, South-Western Division, M.R.C.S. Eng., L.R.C.P. Lond. Vol. II. (complete in itself). Price 7s. 6d. net.

CHURCHILL, J. AND A., 7, Great Marlborough-street, London, W.

Chavasse's Advice to a Mother on the Management of Her Children and on the Treatment on the Moment of Some of Their More Pressing Illnesses and Accidents. Sixteenth Edition. Revised and largely rewritten by Thomas David Lister, M.D. Lond., Physician to Out-patients, Royal Waterloo Hospital for Children and Women, Physician to Mount Vernon Hospital for Consumption and Diseases of the Chest, &c. Price 2s. 6d.

CONSTABLE, ARCHIBALD, AND COMPANY, LIMITED, 16, James-street, Haymarket, London, S.W.

On Leprosy and Fish-eating. A Statement of Facts and Explanations. By Jonathan Hutchinson, F.R.S., and F.R.C.S., LL.D. Glasgow, Edinburgh, Cambridge, and Oxford, D.Sc. Leeds, and Hon. M.D. Dublin, formerly President of the Royal College of Surgeons. Price 12s. 6d. net.

FISCHER, GUSTAV, Jena.

Das Rettungs- und Krankenbeförderungswesen im Deutschen Reiche. Nach dem Material der auf Anregung des Zentral-Komitees für das Rettungswesen in Preussen von den Deutschen Bundesregierungen erhobenen Umfrage im Auftrage des Zentral-Komitees bearbeitet vom Generalsekretär, Prof. Dr. George Meyer, Berlin. III. Ergänzungsband zum Klinischen Jahrbuch. Price M.14.

J. B. LIPPINCOTT COMPANY, Philadelphia and London.

International Clinics. Edited by A. O. J. Kelly, A.M., M.D., Philadelphia, U.S.A., with collaboration. Vol. IV. Fifteenth series, 1906. Price not stated.

KIMPTON, HENRY, 13, Furnival-street, Holborn, London, E.C.

A Manual of Diseases of the Nose and Throat. By Cornelius Godfroy Coakley, A.M., M.D., Professor of Laryngology in the University and Bellevue Hospital Medical College, New York City. Third edition, revised and enlarged. Price 14s. net.

Surgical Diagnosis. A Manual for Students and Practitioners. By Albert A. Berg, M.D., Adjunct Attending Surgeon to the Mount Sinai Hospital, New York. Price 16s. net.

The Ready Reference Handbook of Diseases of the Skin. By George Thomas Jackson, M.D., Chief of Clinic and Instructor in Dermatology, College of Physicians and Surgeons, New York. Fifth edition, thoroughly revised. Price 14s. net.

Pathogenic Micro-organisms, including Bacteria and Protozoa. A Practical Manual for Students, Physicians, and Health Officers. By William Hallock Park, M.D., Professor of Bacteriology and Hygiene, University and Bellevue Hospital Medical College, and Director of the Research Laboratory of the Department of Health, City of New York. Assisted by Anna W. Williams, M.D., Assistant Director of the Research Laboratory. Second edition, enlarged and thoroughly revised. Price 18s. net.

The Diseases of Infancy and Childhood. Designed for the Use of Students and Practitioners of Medicine. By Henry Koplik, M.D., Attending Physician to the Mount Sinai Hospital; formerly Attending Physician to the Good Samaritan Dispensary, New York; ex-President of the American Pediatric Society. Second edition, thoroughly revised and enlarged. Price 25s. net.

Essentials of Bacteriology; being a Concise and Systematic Introduction to the Study of Micro-organisms. By M. V. Ball, M.D., formerly Resident Physician, German Hospital, Philadelphia; formerly Bacteriologist to St. Agnes' Hospital. Fifth edition, thoroughly revised by Karl M. Vogel, M.D., Assistant in Pathology, College of Physicians and Surgeons, Columbia University, New York City. Price 4s. net.

Essentials of Gynecology. Arranged in the Form of Questions and Answers. Prepared especially for Students of Medicine. By Edwin B. Cragin, M.D., Professor of Obstetrics and Gynecology, College of Physicians and Surgeons, New York. Sixth edition, thoroughly revised by Frank S. Mathews, M.D., Instructor in Gynecology, College of Physicians and Surgeons, N.Y. Price 4s. net.

The Science and Art of Prescribing. By E. H. Colbeck, B.A., M.D. Cantab., F.R.C.P. Lond., D.P.H. Cantab., Physician to Out-patients at the City of London Hospital for Diseases of the Chest, Victoria Park, E., and Arnold Chaplin, B.A., M.D. Cantab., F.R.C.P. Lond., Physician to Out-patients at the City of London Hospital for Diseases of the Chest, Victoria Park, E. Second Edition, revised and enlarged. Price 3s. 6d. net.

LEHMANN, J. F., Heustrasse, 20, München.

Lehmann's Medizinische Handatlanten. Band XXXIII. Lehrbuch und Atlas der Zahnärztlichen Technik. Von Dr. med. und phil. Gustav Preiswerk, Lektor an der Universität Basel. Price M.14.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

ANNAND, W. F., M.D., B.S. Lond., has been appointed Clinical Assistant to the Chelsea Hospital for Women.

BUCKLEY, J. C., M.D., Ch.B. Vict., has been appointed Honorary Assistant Physician to the General Hospital, Nottingham.

BULLMORE, CHARLES CECIL, L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been re-appointed Medical Officer of Health for the Falmouth and Truro Port Sanitary Authority.

CADDICK, C. J., M.B., F.R.C.S. Edin., D.P.H. Camb., has been appointed Surgeon to the Out-patient Department at the Walsall and District Hospital.

DIXON, W. E., M.B., B.S. Lond., has been appointed to the Chair of Materia Medica and Pharmacology at King's College Hospital.

DUNIG, D. J., L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed Medical Officer to the Cottage Homes, Hornchurch, of the parish of St. Leonard, Shoreditch, London.

HALLIWELL, T. O., M.R.C.S., L.R.C.P. Lond., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Dewsbury District of the county of York.

HARPER, CHARLES, L.R.C.P. Lond., M.R.C.S., has been re-appointed Medical Officer of Health of the Bath Rural District.

HEWITSON, W. A., M.R.C.S., L.R.C.P. Edin., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Haswell District of the county of Durham.

MILNE, L. J., M.D. Aberd., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Mirfield District of the county of York.

PHILLIPS, JOHN, M.D. Cantab., F.R.C.P. Lond., has been appointed to the Chair of Obstetric Medicine and Diseases of Women and Children at King's College.

POLLOCK, A. K. HALLIDAY, M.R.C.S., L.R.C.P. Lond., has been appointed Medical Officer to the East Indian Railway, India.

SINGER, CHARLES, M.B., B.Ch. Oxon., has been appointed Resident Medical Officer in Charge of the Government General Hospital, Penang.

STILL, G. F., M.D. Cantab., has been appointed Professor of Diseases of Children at King's College Hospital.

TAYLOR, F. E., M.R.C.S., L.R.C.P. Lond., has been elected Demonstrator of Bacteriology at King's College Hospital.

WHITAKER, J. H., M.D., B.Ch. R.U.I., has been appointed Clinical Assistant to the Chelsea Hospital for Women.

WILSON, W. JAMES, M.B. R.U.I., has been appointed Riddle Demonstrator in Pathology and Bacteriology at Queen's College, Belfast.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

ABERDEEN (NEW) POORHOUSE.—Resident Assistant Medical Officer. Salary £80 per annum, with board, attendance, &c.

BIRKENHEAD BOROUGH HOSPITAL.—Junior Resident House Surgeon. Salary £80 with fees.

BOURNEMOUTH, ROYAL BOSCOMBE AND WEST HANTS HOSPITAL.—House Surgeon. Salary £80 per annum, with board, lodging, and washing.

BRIDGWATER HOSPITAL.—House Surgeon. Salary £80 a year, with board and residence.

BRISTOL EYE HOSPITAL.—House Surgeon. Salary £80, with board and residence.

CANTERBURY, KENT AND CANTERBURY HOSPITAL.—House Physician, unmarried. Salary £90 a year, with board and lodging.

CARLISLE NON-PROVIDENT DISPENSARY.—Resident Medical Officer. Salary £150 per annum, with apartments.

CENTRAL LONDON THROAT AND EAR HOSPITAL, Gray's Inn-road, W.C.—Honorary Registrar.

CHARING CROSS HOSPITAL.—Resident Medical Officer. Salary £100 per annum.

CHESTER GENERAL INFIRMARY.—House Physician. Salary £90 per annum, with residence and maintenance.

COTFORD, TAUNTON, SOMERSET AND BATH ASYLUM.—Assistant Medical Officer, unmarried. Salary £140 per annum, increasing to £160, with apartments, board, &c.

DURHAM COUNTY HOSPITAL.—House Surgeon. Salary £120, with board and lodging.

EGYPTIAN GOVERNMENT, KASR-EL-AINY HOSPITAL.—Resident Surgical Officer. Pay £250 a year, with quarters, servants, washing, coal, and light.

GARTLOCH ASYLUM, Gartcosh.—Assistant Medical Officer. Salary £125, with board and lodging.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—Resident House Physicians for six months. Honorarium of £25.

HOSPITAL FOR DISEASES OF THE THROAT, Golden-square, W.—House Surgeon. Salary at rate of £50 per annum, with residence, board, &c.

HOSPITAL FOR EPILEPSY AND PARALYSIS, Maida Vale.—Resident Medical Officer for six months. Salary at rate of £50 a year, with board and washing.

HULL ROYAL INFIRMARY.—Honorary Assistant Ophthalmic Surgeon.

KINGSEAT ASYLUM.—Assistant Medical Officer. Salary £110 per annum, with board, &c.

LEEDS PUBLIC DISPENSARY.—Junior Resident Medical Officer. Salary £100, with board and lodging.

LINCOLN COUNTY HOSPITAL.—Junior House Surgeon, unmarried, for six months. Honorarium of £25, with board, residence, and washing.

LIVERPOOL HOSPITAL FOR CONSUMPTION.—Two Honorary Assistant Physicians.

MILLER HOSPITAL AND ROYAL KENT DISPENSARY, Greenwich-road, S.E.—Honorary Medical Officer for X Ray and Electro-Therapeutical Department.

NATIONAL HOSPITAL FOR THE RELIEF AND CURE OF THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury.—Assistant Surgeon.

NOTTINGHAM CHILDREN'S HOSPITAL.—House Surgeon, unmarried, for six months. Board, residence, and washing provided.

NOTTINGHAM GENERAL HOSPITAL.—Assistant House Physician. Salary £100, with board, lodging, and washing.

OLDHAM INFIRMARY.—Senior House Surgeon. Salary £100 per annum, with board, residence, and washing.

PADDINGTON GREEN CHILDREN'S HOSPITAL, London, W.—House Physician, also House Surgeon, both for six months. Salary at rate of 50 guineas a year, with board and residence.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—Pathologist and Registrar. Salary at rate of £80 per annum. Also Assistant Resident Medical Officer, for four months. Salary at rate of £50 per annum, with board, residence, and washing.

REIGATE TOWN COUNCIL AND RURAL DISTRICT COUNCIL.—Medical Officer of Health. Salary £500 per annum.

ROYAL EAR HOSPITAL, Dean-street, Soho, W.—House Surgeon, non-resident. Honorarium at rate of £40 per annum. Also Clinical Assistants.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.—House Physician and Casualty House Surgeon, both for six months. Board, &c., provided. Also Resident House Physician and Resident House Surgeon (Female). Board, &c., provided.

ROYAL HALIFAX INFIRMARY.—Second House Surgeon, unmarried. Salary £100 per annum, with residence, board, and washing.

ROYAL HOSPITAL FOR DISEASES OF THE CHEST, City-road, E.C.—Resident Medical Officer for six months. Salary at rate of £120 per annum, with apartments, board, and washing. Also Clinical Assistants.

ST. BARTHOLOMEW'S HOSPITAL.—Lectureship on Chemistry.

ST. GEORGE'S UNION INFIRMARY, Fulham-road, S.W.—Second Assistant Medical Officer. Salary £120 per annum, with board, residence, and washing.

SAMARITAN FREE HOSPITAL FOR WOMEN, Marylebone-road, N.W.—Clinical Assistants.

SEAMEN'S HOSPITAL SOCIETY, Greenwich, S.E.—DREADNOUGHT HOSPITAL:—Two House Physicians and Two House Surgeons. Salaries £50 per annum, with board, residence, and washing. BRANCH HOSPITAL, Royal Albert Dock, E.:—Senior House Surgeon. Salary £75 per annum, and an additional £25 per annum for acting as Registrar, &c., with board, residence, and washing. Also House Surgeon. Salary £50 per annum, with board, residence, and washing.

SETTLEMENT OF WOMEN WORKERS, Canning Town, E. (MEDICAL MISSION HOSPITAL).—Assistant Doctor (female).

SWANSEA GENERAL AND EYE HOSPITAL.—Assistant House Surgeon. Salary £50 per annum, with board, apartments, and attendance.

TOTTENHAM HOSPITAL, London, N.—House Surgeon, House Physician, Casualty Officer, all for six months. Salaries at rates of £90, £80, and £40 per annum respectively, with board, residence, and laundry.

WESTMINSTER HOSPITAL, Broad Sanctuary, S.W.—Casualty Medical Officer. Honorarium of £50.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy as Certifying Surgeon under the Factory and Workshop Act at Mallow, in the county of Cork.

Births, Marriages, and Deaths.

BIRTHS.

BAYLISS.—On March 27th, at 5, Gay-street, Bath, the wife of Richard Arthur Bayliss, M.R.C.S. Eng., L.R.C.P. Lond.—a daughter.

BENT.—On March 25th, at Veliam House, Southfields, the wife of John Gibbs Francis Bent, M.D., of a daughter.

CARMICHAEL.—On March 27th, at The Elms, East Hill, Wandsworth, S.W., the wife of Henry Carmichael, M.B., C.M. Glasg., of a son.

CARRUTHERS.—At 5, Charlotte street, Perth, N.B., on March 14th, the wife of D. A. Carruthers, M.B., C.M., D.P.H., of a son.

CHAMBERS.—On March 21st, at The Priory, Roehampton, the wife of James Chambers, M.D., of a son.

LATCHMORE.—On the 22nd inst., at Sherwood Villa, Worksop, Notts, to Ernest S. Latchmore and Alice Latchmore, M.D. (*née* Craig)—a son.

RUNDLE.—On March 12th, at Babbicombe, Devon, the wife of Colonel Cubitt S. Rundle, I.M.S., of a daughter.

WILSON.—On March 26th, at The Beeches, Walsham-le-Willows, the wife of Francis Kenneth Wilson, M.B., B.S., M.R.C.S., of a son.

MARRIAGES.

CLOGG-KING.—On March 24th, at Holy Innocents' Church, South Norwood, by the Rev. H. Bickersteth Ottley, M.A., Herbert Sherwell Clogg, M.S., F.R.C.S., of Harley-street, second son of the Rev. William H. Clogg of Clapton, and Emma Charlotte Mildred, eldest daughter of the late Frank King, Esq., M.I.C.E., of Barnes, and "Colwyn," Sydenham, and Mrs. King of South Norwood.

ELLIS—WHEELER.—On March 13th, at St. Jude's Church, Belfast, Henry Reginald Ellis, M.B., West African Medical Staff, to Isobel, second daughter of C. G. Wheeler, of South-parade, Belfast.

MCCLURE—BUÉ.—On March 24th, at St. George's, Hanover-square, James Campbell McClure, M.B., to Louise Marie, younger daughter of the late Jules Bué, Chevalier de la Legion d'Honneur.

STUART—LUMSDEN.—On March 26th, at St. Mary's Chapel, East Church, Aberdeen, William Lumsden Stuart, M.D., B.S. Lond., of Oakdene, Camberley, Surrey, to Jane Abernethy, eldest daughter of John Lumsden, Esq., J.P.

DEATHS.

FOTHERGILL.—On March 18th, at Bowes, Yorkshire, John A. Fothergill, L.D.S., M.R.C.S., of Raydaleside, Darlington.

KRAUS.—On March 19th, at Herzog von Brabant, Karlsbad, Austria, Dr. Ignaz Kraus, Sr., aged 69.

MARRIOTT.—On March 20th, Robert Buchanan Marriott, M.R.C.S., L.S.A., L.M., aged 75 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

CREMATION AND MUSICIANS.

To the Editors of THE LANCET.

SIRS,—A correspondent recently wrote to a musical contemporary asking the editor if he could furnish him with a list of distinguished musicians who have been cremated or who had a motor-car funeral. The editor regretted his inability to do so and added in his correspondence column, "Ask Mr. Algernon Ashton." I, therefore, venture to vouchsafe some small information on this subject. With respect to motor-car funerals, I doubt very much whether any musician has ever yet been carried to the grave by this mode of conveyance nor was I aware that funerals by motor-car were already in vogue. As regards distinguished musicians who have been cremated I can for the moment only think of nine, whose names are as follows: Hans von Bülow, the great pianist and conductor; Sims Reeves, the famous tenor; Ridley Prentice, well known as a successful piano teacher and writer on music; Henry Hiles, a noted composer and contrapuntist; Adolf Schimon, a distinguished singing teacher and talented composer; Edward Dannreuther, the celebrated pianist, teacher, writer on music, and ardent disciple of Richard Wagner; Anton Seidl, the famous conductor; Antoinette Sterling, the renowned songstress; and Jenny Bürde-Ney, the celebrated opera singer. Like Sir Henry Irving, Hans von Bülow was first embalmed, then cremated (to my mind a most incomprehensible proceeding), and his ashes ultimately interred in the principal cemetery at Hamburg. The ashes of Ridley Prentice, who was an intimate personal friend of mine, were scattered to the four winds by his own request! What became of the incalcinated remains of the other seven just mentioned I do not know. The illustrious Johannes Brahms was in favour of cremation and desired that his body should be consumed by fire, but as he left no proper will his wish was (fortunately) not carried out. My utter abhorrence for the burning up of human bodies and my cogent reasons for this abhorrence have been adequately expressed in former letters to the press, so that I need not repeat them here. I am glad, however, to observe that so few musicians seem to be advocates of this truly detestable practice. I am, Sirs, yours faithfully,

St. John's Wood, N.W., March 24th, 1906. ALGERNON ASHTON.

"PHONURESIS."

To the Editors of THE LANCET.

SIRS,—On several occasions during the last 12 months I have had the painful pleasure of sitting during the evening in a room where a phonograph was in a state of activity. On each occasion the result has been that without any other variation from the usual life's routine and with no increase in either the solids or liquids usually consumed there has been a large increase in the quantity of urine passed during the night—in fact, it has been about doubled. Can this be due to some action on the nerve centres? If anyone cares to try the treatment I should recommend the following basis to work on:—full dose, piccolo solos; medium dose, operatic selections; and small dose, "The Heart Bowed Down," &c. I inclose my card and vouch for the accuracy of what I have stated. I am, Sirs, yours faithfully,

March 26th, 1906. ENQUIRER.

*** The diuretic effect of whistling sounds is well known and has been enshrined in an eighteenth century poem upon a fashionable "female charioteer":

> "Graceful as John she moderates the reins,
> And whistles soft her diuretic strains."

—ED. L.

WANTED—A HOME FOR AN EPILEPTIC.

To the Editors of THE LANCET.

SIRS,—Can any of your readers inform me of a home to which a patient of mine can send her little girl, aged five years, who is suffering from epilepsy? The patient is noisy and wants constant attention. Her parents, though poor, are willing to pay a nominal fee if necessary.

I am, Sirs, yours faithfully,

THOMAS J. T. MCHATTIE.

619, Holloway-road, London, N., March 27th, 1906.

WHEN THINGS ARE NOT WHAT THEY SEEM.

To the Editors of THE LANCET.

SIRS,—One is much amused at times with the specious arguments put forward by manufacturers against your articles on pure food questions. The enclosed pamphlet on the faults of the pure food law in Kentucky furnishes some good illustrations of the guilelessness of manufacturers who pose as "friends of the poor" because they provide cheap imitations that are "as good as, if not better than, the real article." I am, Sirs, yours faithfully,

March 19th, 1906. WALTER THORP, B.Sc., F.I.C., F.C.S.

*** The pamphlet sent to us is a bulletin issued by the Kentucky Agricultural Experiment Station of the State College of Kentucky on the labels used on adulterated and imitation foods. There are some entertaining examples in it of labels designed to deceive the unwary. —ED. L.

WANTED—A PRACTICE.

To the Editors of THE LANCET.

SIRS,—I am anxious to find an opening for a young man who from deafness is too severely handicapped to enable him to compete with other medical men. He would be content with a very modest income from practice if he could find an opening in a small country place where there is no other medical man and where he could obtain a house with a garden. Although too deaf for the use of an ordinary stethoscope he can hear fairly well with a phonendoscope and it is hoped that he would be able to be of some service as a medical man in some outlying district where the people would employ him, even with his disability, rather than be without any medical man at all. He can read what people say by the method of lip-reading. Moreover, he can hear conversation when there are no disturbing sounds. Although well aware of his lowered value as a medical man he is very unwilling to throw away the years which he has devoted to medicine without first trying to obtain professional work for himself. He is 33 years of age. I am, Sirs, yours faithfully,

March 26th, 1906. VICTORIA.

Kenelm.—Chloroform prepared from methylated alcohol, which fulfils the tests for purity imposed by the British Pharmacopœia, is quite as safe as that prepared from ethylic alcohol. Some authorities have contended that more headache and other undesirable after-effects follow its use, but the accuracy of this contention is contested by others whose statements are as worthy of credence. The two preparations, if equally well purified, are probably identical so far as their effects as anæsthetics are concerned. Methylated chloroform has been successfully used in a number of large hospitals for many years. Will our correspondent kindly send us his name and address again, since his card accidentally got detached from his letter.

Alpha.—Our correspondent will find some information in the book entitled "Schenk's Theory: the Determination of Sex," which was reviewed in THE LANCET of May 28th, 1898, p. 1472. It was published by the Werner Company whose present address is, we believe, 3, Broadway, Ludgate-hill, London, E.C. He is also advised to read two letters headed "The Causation of Sex" in THE LANCET of Jan. 7th (p. 58) and 28th (p. 256), 1905. The first of these letters contains references to other articles on the subject which have appeared in our columns.

X. Y. Z.—We have no knowledge of the apparatus in question. If it does produce a vacuum it might possibly stimulate growth by determining an increased blood-supply to the part to which it is applied, just as a cupping-glass would. But we doubt it.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (2nd).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (3 P.M.).

TUESDAY (3rd).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (2 P.M., Ophthalmic, 2.15 P.M.).

WEDNESDAY (4th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan 9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.), Children, Gt. Ormond-street (9.30 A.M., Dental, 2 P.M.).

THURSDAY (5th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (2.30 P.M.).

FRIDAY (6th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.) Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), St. Mark's (2.30 P.M.).

SATURDAY (7th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9.30 A.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

SOCIETIES.

TUESDAY (3rd).—PATHOLOGICAL SOCIETY OF LONDON (20, Hanover-square, W.).—8.30 P.M. Communications:—Mr. A. G. R. Foulerton: A Streptococcic Infection of the Pig simulating Tuberculosis.—Mr. S. R. Douglas: Some Experiments in Reference to Immunity against Bacillus Pestis.

WEDNESDAY (4th).—OBSTETRICAL SOCIETY OF LONDON (20, Hanover-square, W.).—8 P.M. Specimens will be shown by Dr. A. Routh, Dr. Boxall, Dr. Blacker, and Mr. J. Bland Sutton. Short Communication:—Dr. E. J. Maclean: Case of Ectopic Gestation in which the Fœtus was removed Six and a Half Months after Spurious Labour at Term. Demonstration:—Dr. A. W. Addinsell: Chronic Infective Metritis.

THURSDAY (5th).—NORTH-EAST LONDON CLINICAL SOCIETY (Tottenham Hospital, N.).—4 P.M. Clinical Cases.

FRIDAY (6th).—WEST LONDON MEDICO-CHIRURGICAL SOCIETY (West London Hospital, Hammersmith, W.).—8 P.M. Clinical Meeting.

LARYNGOLOGICAL SOCIETY OF LONDON (20, Hanover-square, W.).—5 P.M. Exhibition of Cases, Drawings, and Specimens.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MONDAY (2nd).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. C. Fox: Clinique. (Skin.) 5.15 P.M. Lecture:—Mr. T. Walker: Rectal Examination in Urinary Disease.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—2.15 P.M. Medical and Surgical Clinics. 2.30 P.M. Operations. 4 P.M. Mr. Dunn: Ophthalmology.

FARMERS' CLUB (Whitehall Rooms, Hôtel Métropole, S.W.).—4 P.M. Paper:—Mr. F. J. Lloyd: The Relation of the Medical Profession to the Dairy Industry.

TUESDAY (3rd).—ROYAL COLLEGE OF PHYSICIANS OF LONDON (Pall Mall East).—5 P.M. Oliver-Sharpey Lecture:—Dr. B. I. Spriggs: The Bearing of Metabolism Experiments upon the Treatment of Some Diseases.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. L. Guthrie: Clinique. (Medical.) 5.15 P.M. Lecture:—Dr. J. E. Squire: Pulmonary Tuberculosis in Children.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—11.30 A.M. Dr. Wright: Bacteriology. 2.15 P.M. Medical and Surgical Clinics. 2.30 P.M. Operations.

WEDNESDAY (4th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. C. Ryall: Clinique. (Surgical.) 5.15 P.M. Lecture:—Dr. H. F. Buzzard: Some Acute Infective Disorders of the Nervous System.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—11 A.M. Dr. Davis: Examination of Throat, Nose, and Ear. 12 noon. Mr. Baldwin: Practical Surgery. 2.15 P.M. Medical and Surgical Clinics. 2.30 P.M. Operations.

CENTRAL LONDON THROAT AND EAR HOSPITAL (Gray's Inn-road, W.C.).—5 P.M. Demonstration:—Dr. Abercrombie: Nose.

THURSDAY (5th).—ROYAL COLLEGE OF PHYSICIANS OF LONDON (Pall Mall East).—5 P.M. Oliver-Sharpey Lecture:—Dr. B. I. Spriggs: The Bearing of Metabolism Experiments upon the Treatment of Some Diseases.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. Hutchinson: Clinique. (Surgical.) 5.15 P.M. Lecture:—Mr. R. Jones (Liverpool): Internal Derangements of the Knee.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—2.15 P.M. Medical and Surgical Clinics. 2.30 P.M. Operations. 3.15 P.M. Mr. Bidwell: Intestinal Surgery. 4 P.M. Mr. Dunn: Ophthalmology.

HOSPITAL FOR SICK CHILDREN (Gt. Ormond-street, W.C.).—4 P.M. Lecture:—Dr. Thompson: Tuberculous Enlargement of the Bronchial Glands in Children.

FRIDAY (6th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. N. MacLehose: Clinique. (Eye.)

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—11.30 A.M. Dr. Wright: Bacteriology. 2.15 P.M. Medical and Surgical Clinics. 2.30 P.M. Operations.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used

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READERS who usually obtain their copies of THE LANCET at the bookstalls on the Great Western, the London and North Western, and the minor systems in connexion with these railways, are requested to communicate with the Manager, 423, Strand, London, W.C., if they experience any difficulty in getting copies of THE LANCET at these bookstalls.

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METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Mar. 29th, 1906.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rain-fall.	Solar Radia in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks
Mar. 23	29·92	N.E.	...	70	41	31	31	34	Fine
" 24	29 74	N.E.	0·03	54	43	32	33	35	Snowing
" 25	29 62	N.	0·04	72	42	35	35	37	Cloudy
" 26	29 72	N.E.	0·08	76	43	32	33	35	Cloudy
" 27	29 91	N.E.	0·01	84	45	34	35	36	Cloudy
" 28	30·08	E.	...	89	46	33	35	39	Cloudy
" 29	30 05	N.	...	89	45	38	37	42	Cloudy

During the week marked copies of the following newspapers have been received:—*Derbyshire Times, Morning Leader, Daily News, Daily Telegraph, Islington Gazette, Islington News, Birkenhead Advertiser, Manchester City News, Leamington Spa Courier, Dublin Weekly Times, Manchester Chronicle, Cork Constitution, Plymouth Eastern Morning News, Standard, Daily Chronicle, Malvern Gazette, Scarboro' Mercury, Hackney Mercury, &c.*

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